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Nov. 26th.

Mr. LEA, President, in the Chair.

Ninety-one members present.

In accordance with the invitation extended at the preceding meeting, Dr. Hayes gave a narrative of the explorations of his late Arctic expedition. He made copious collections in various departments of Natural History, which, with great liberality, he placed at the disposal of the Academy, for the selection of such specimens as are desirable additions to the Museum.

On report of the respective Committees, the following papers were ordered to be published in the Journal:

Monograph of the Polyzoa of the Secondary and Tertiary formations of North America, by Wm. M. Gabb, and George H. Horn, M. D.

New Unionidæ of the United States, by Isaac Lea.

Descriptions of new Birds from Western Africa in the Museum of the Academy of Natural Sciences of Philadelphia, by John Cassin.

And the following in the Proceedings:

Notes on the Coleopterous Fauna of Lower California.

BY JOHN L. LE CONTE.

The Coleoptera of Lower California, thus far unknown to science, are now, by the industry of my indefatigable friend, Mr. John Xantus, capable of being duly compared with those of contiguous regions. His collections embrace (as I am informed by him) more than 500 species, of which the portions thus far sent to me contain 114. It is not my intention on the present occasion to describe the new species which have thus become known to me, but rather to await the arrival of the remainder of the collections, and then to prepare a synopsis of the fauna. In this paper I will merely call attention to the relations between the fauna of the region in question and those of California, Arizona, Mexico and Texas, describing only a few of the most conspicuous and characteristic species.

Among the 114 species which I have received, the following are found in Upper California (maritime): *Cicindela sigmoidea* Lec.; *C. hemorrhagica* Lec.; *Hydrophilus californicus* Lec.; *Temnochila chlorodia* Lec.; *Sphenophorus procerus* Lec.; *Dermestes Mannerheimii* Lec.; *D. vulpinus* Linn.

These are found in Arizona: *Saprinus fimbriatus* Lec.; *Cerenopus concolor* Lec.; *Hydrophilus limbialis* Lec.; *H. ellipticus* Lec.; *Diploaxis angulata* Lec.; *Clerus latecinctus* Lec.; *Asclera cana* Lec.; *Dineutus sublineatus* Aulé, (♀ integer Lec.); *Sinoxylon asperum* Lec.; *Arhopalus eurystethus* Lec.

And these in Texas and New Mexico: *Megacephala carolina* Dej.; *Casnonia pennsylvanica*; *Lebia grandis* Hentz.; *Plochionus timidus* Hald.; *Derobrachus geminatus* Lec.; *Elaphidion validum* Lec.; *Tragidion annulatum* Lec.; *Dendrobias 4-maculatus*; *Coccinella abdominalis* Say; *Acmaeodera flavomarginata*; *Dermestes vulpinus* Linn.; *Euparia strigata*?; *Ligyris rufinasus* Lec.; *Ludius (Crigmus) texanus* Lec.; *Bostrichus punctipennis* Lec.; *Notoxus monodon*?; *Sitophilus oryzae*; *Hydrophilus triangularis* Say; *Polycaon exesus* Lec.; *Calosoma scutator* Fabr.

Of the remaining species nearly all appear to be new; the genera are those already known in our territory, with the exception of one species of *Megasoma*, several species (perhaps five) of *Breathus*, allied to the common Mexican species, and three *Cerambycidae* of unknown genera.

1861.]

A very few are closely allied to, and perhaps identical with described Mexican species, but the number is very small.

Some of the more conspicuous and peculiar species are described below: enough has been stated to show that the affinities of the fauna are with that of the region extending from the Colorado Desert across to the Rio Grande valley, thereby confirming the results obtained* by Prof. Baird and Mr. Cope† from the study of the vertebrata collected by Mr. Xantus.

The limited number of species of those two classes precludes the possibility of the occurrence of many new forms in the region here treated of; but in the number of peculiar species of the much more extensive class of insects seen in Mr. Xantus' collections, we recognize that Lower California constitutes one or more provinces of the Interior district, as defined by me in the introduction to my synopsis of the Coleoptera of Kansas and New Mexico.‡

The preponderance of Tenebrionidæ, both in genera and species seen in the fauna of Upper California and Arizona has here been partially destroyed. The genera which survive are, however, such as are already known from the last mentioned region. None of those peculiar to maritime California have as yet occurred.

MEGASOMA Kirby.

M. Thersites, piceo-niger; ♂ sordide pubescens, capite cornu elongato apice bifurco, thorace dense punctulato, angulis anticis acutis divaricatis, cornu brevi apice emarginato, elytris punctulatis et obsolete punctatis; ♀ punctata, thorace glabro elytris parce pubescentibus, basi glabris. Long. 1.18—1.40.

Cape San Lucas. Very much smaller than the other species, of which it approaches most nearly to *M. Hector*, but the anterior angles of the thorax are divergent.

EURYOMIA Burm. (emend. Lac.)

Eu. fascifera, nigra, clypeo apice truncato et late reflexo, thorace latitudine haud brevior, lateribus obliquis parum rotundatis, nigro nitido, parce punctato, margine basali lateribusque flavis, his puncto nigro ante medium notatis, elytris opacis, a humeris paulo angustatis, margine humerali fasciis duabus latius apiceque flavis, pectore abdominisque lateribus pallide pilosis. Long. .66.

Cape San Lucas.

CHALCOLEPIDIUS Esch.

C. rubripennis, niger, squamulis minutis aureo-smaragdinis dense tectus, thorace latitudine fere sesqui longiore, lateribus rotundatis, angulis posticis brevibus divergentibus, elytris rubris, striis nigris punctatis, interstitiis paulo convexis. Long. 1.11—1.75.

Cape San Lucas. A specimen also sent as found at Cajon Pass, California. Belongs to the group of the genus, having the scutellum triangular, slightly emarginate in front, and the third joint of the antennæ equal to the fourth. The antennæ are serrate in both sides.

LYCUS Fabr.

L. cruentus, late coccineus, thorace latitudine brevior, apice carinato, dein fovea rhomboideâ impresso, elytris postice sensim dilatatis thorace duplo latioribus, margine costisque quatuor parum elevatis, interstitiis rugose punctatis, a dodrante ad apicem nigris, tibiis tarsis antennis capiteque nigris, hoc angusto thorace haud brevior. Long. .37—.53.

Cape San Lucas. The elytra of the females are less dilated behind so as to be only one half wider than the thorax.

* Proceedings Acad. Nat. Sci. 1859, 299.

† Ibid, 1861, 305.

‡ Smithsonian Contributions, vol. xi. p. iv. (These results are also alluded to on page 49 of these Proceedings for 1860.)

PELECYPHORUS Sol.

P. ægrotus, ater opacus, thorace latitudine haud brevior, lateribus late rotundatis serratis, postice subangustato, et lateribus sinuato, angulis posticis acutis, basi late emarginato, lateribus et plaga dorsali postica transversim rugose punctatis; elytris thorace duplo latioribus, ovalibus postice valde declivibus et prolongatis, humeris rotundatis, margine costaque discoidali postice magis elevata et abbreviata rugis transversis undulatis elevatis connexis, epipleuris sublævibus. Long. .90.

One specimen. Cape San Lucas. In general appearance resembles in an extraordinary manner *P. morbillosus* Lec. (Pr. Ac. 1858, 74), but, besides minor differences, the humeri are not toothed but rounded.

P. bifurcus, ater, subnitidus, thorace punctato valde convexo, lateribus rotundatis, basi sinuato, angulis omnibus acutis, margine anguste reflexo, dorso profunde canaliculato; elytris postice sensim latioribus, basi subemarginatis, angulo humerali distincto obtuse, parce punctatis, margine elevato pone trientem duplici. Long. .73.

One specimen. Cape San Lucas. The elevated lateral margin of the elytra bifurcates at the anterior third, the portions then diverge, neither reaching the tip; the inner is a little more elevated, but also a little shorter than the outer portion.

P. sexcostatus, sordide niger, parce pubescens, thorace latitudine paulo brevior, planiusculo, lateribus late rotundatis anguste reflexis, angulis acutis, haud dense punctato; elytris elongato-ovalibus, parce punctatis, margine laterali serrulato costisque dorsalibus duabus, (interna integra, altera utrinque abbreviata) acute elevatis. Long. .50.

One specimen. Cape San Lucas. In form somewhat resembles *P. parallelus* Lec., but the sides of the thorax and elytra are more rounded.

CENTRIOPTERA Mann.

C. spiculifera, nigra, subnitida, thorace latitudine brevior, postice angustato lateribus valde rotundatis, postice breviter paulo sinuatis, angulis posticis rectis; elytris elongato-ovalibus, thorace parum latioribus, seriatim punctatis, interstitiis internis planis parce uniseriatim punctatis, ad apicem et externis tuberculis valde acutis ornatis, femoribus posticis intus tuberculis exasperatis. Long. 1.08.

Larger and stouter than *C. muricata* Lec., with the tubercles more acute and more elevated, so as to become towards the apex actual short spines; the sides of the thorax are also not strongly punctured.

CRYPTOGLOSSA Sol.

C. seriata, nigra subnitida, thorace latitudine brevior, parum convexo, postice modice angustato, lateribus rotundatis postice subsinuatis, angulis posticis rectis, elytris subovatis, postice subacutis, seriatim punctatis, interstitiis parce uniseriatim punctatis, externis postice tuberculis parum elevatis exasperatis. Long. .75—86.

Cape San Lucas. Has very much the form of Centrioptera, but the hind thighs are not at all serrate.

CERENOPUS Lec.

C. cribratus, niger, subnitidus, thorace ovato, convexo, latitudine longiore, basi late subemarginato, elytris seriatim cribratis, ad apicem utrinque tuberculo magno obtuso, alteroque parvo suturali armatis. Long. .55—71.

Mas tibiis anticis introrsum sinuatis, et serratis, femoribus posticis dente magno acuto armatis.

Femina tibiis anticis crassioribus haud serratis femoribus posticis simplicibus.

Cape San Lucas. Of the same general form as *C. concolor* Lec.

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DIABROTICA (Chevr.) Er.

D.? *in solita*, supra sordide flava, thorace latitudine duplo brevior, apice subsinuato angulis anticis prominulis, basi emarginato angulis obtusis subrotundatis, lateribus anguste marginatis, elytris thorace latioribus oblongis, confertim punctatis, gutta posthumerali, alteraque discoidali pone medium, nigris ornatis, scutello nigro; subtus niger, abdominis segmentis flavo-piceo marginatis, femoribus flavis palpis antennisque nigris, his thorace elytrisque haud brevioribus.

Mas alatus abdomine elytris haud longiore. Long. .23.

Femina aptera, abdomine inflato, elytris plus duplo longiore. Long. .46.

Cape San Lucas. The difference in size between the sexes is produced entirely by the abdomen of the female being immensely distended. The first joint of the antennæ is sometimes piceous, and the head has sometimes a short black occipital line. The thorax is moderately convex, with a slight impression at the middle, and another at the base; there is also a faint transverse impression before the middle. The second and third joints of the antennæ are together equal to the fourth.

It is extraordinary to find the genera of the Pacific coast of most diverse families in which the abdomen of one or both sexes is imperfectly covered by the elytra, and the wings wanting, thus unexpectedly increased by a Chysomelide. There does not appear to me any sufficient reason for separating the present species from *Diabrotica*, though I have not as yet studied the group to which it belongs sufficiently to entitle my opinion to much weight.

New species of COLEOPTERA inhabiting the Pacific district of the United States.

BY JOHN L. LECONTE, M. D.

The species described in the present paper have been derived partly from contributions of friends, partly from Government expeditions. Those from the Northwestern Boundary Commission were made by Mr. George Gibbs, and the late Dr. Kennerley; those from Lieut. Mullan's Wagon Road Expedition were collected by Mr. John Pearsall, and have been submitted to me by the Smithsonian Institution. It is much to be regretted that the most valuable portion of the last mentioned collection, procured within the mountainous region at the head of the Missouri river, has in great part been rendered by the collector unavailable for scientific research; the restrictions placed upon investigations by the Entomological Society of Philadelphia, now in possession of the larger part of the collection, being such as to render any satisfactory comparisons extremely difficult.

I must return my cordial acknowledgements to Mr. Andrew Murray, now of London, for the liberality with which he has given specimens, many indeed unique, in aid of my investigations; and also to Mr. Alex. Agassiz, for excellent collections made at San Mateo, Mendocino City, and on the Gulf of Georgia; and to Mr. C. M. Bache, U. S. Coast Survey, for a good series of species from the islands of Santa Barbara and Santa Cruz; and likewise to Mr. G. Davidson, U. S. Coast Survey, for his continued efforts in supplying specimens from California.

1. *Cicindela longilabris* Say. A beautiful green variety of this species was found at Kootenay Camp; a similar variety has been found in Newfoundland.

2. *Cicindela montana*, atra, labro magno, antice obtuse dentato, lateribus sinuato, thorace transverso, trapezoideo, modice convexo, confertim rugoso, impressionibus profundis, elytris nitidis, confertim punctatis, fascia trans-

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versa media sinuata, obtuse deflexa, sæpe deficiente alba; subtus nigra parce albo-pilosa. Long. '6.

Mas labro mandibularumque basi albis; femina labro mandibulisque nigris.

Valleys of the Rocky Mountains. Belongs to the same group (III. of my Monograph, Trans. Am. Phil. Soc. xi. 33) as *C. longilabris*, from which it differs at first sight by the shining and more deeply punctured elytra, as well as by the black labrum of the female.

3. *Trachypachys Gibbsii*, ovalis, nigro-æneus, nitidus, thorace latitudine fere duplo brevior, antrosum sensim angustato, lateribus rotundatis, postice profunde transversim impresso, utrinque subbifoveato, et parce punctato, elytris versus suturam seriatim punctatis. Long. '25.

East of Fort Colville. Larger and broader than *T. inermis Motsch.*, and very different by the form of the thorax and its posterior impression. The thorax is not at all narrowed behind, but gradually narrowed almost from the base to the apex; the impression is somewhat punctured, with two moderately distinct foveæ each side.

4. *Pterostichus oregonus*, longiusculus, niger, nitidus, (elytris feminae opaciusculis) thorace latitudine haud brevior, postice angustato, lateribus late rotundatis postice subsinuatis, tenuiter marginatis, angulis posticis subrectis, basi utrinque parce punctato, et stria basali longiuscula impresso, linea dorsali profunda, elytris striis tenuibus haud punctatis, interstitiis planis, 3io foveis 5 impresso. Long. '55—'58.

East of Fort Colville. This species belongs to the same division as *P. ornatum*, *adstrictus*, &c., (*Bothriopterus* Chaudoir), but differs much in shape from those species, resembling, in fact, very closely in outline our common *P. adoxus*, and having the margin of the thorax not wider than in that species.

5. *Anisodactylus viridescens*, elongato-oblongus, æneo-viridis, nitidus, capite utrinque fortius haud dense punctato, thorace latitudine paulo brevior, postice parum angustato, lateribus late rotundatis postice subobliquis haud sinuatis anguste marginatis, angulis posticis obtusis subrotundatis, basi utrinque impresso, apice basi lateribusque punctato, elytris striatis subpubescentibus, interstitiis alternis punctatis alternis, sublaevibus, 3io postice 1-punctato; subtus niger. Long. '34—'38.

California; Mr. A. Murray. Cape Mendocino; Mr. A. Agassiz. This species is related to *A. alternans Lec.*, but the sides of the thorax are not sinuate, and the hind angles are not prominent. The 3d and 5th intervals are smooth, but in most specimens, on close inspection, a series of small points is visible at their inner margin. The first and seventh intervals are free from punctures; the others are distinctly, but not densely punctured. The punctures emit very short pale hairs.

6. *Anisodactylus pitychrous*, elongato-oblongus, nigro-piceus, nitidus, thorace latitudine vix brevior, postice paulo angustato, lateribus tenuiter marginatis antice rotundatis, postice obliquis, angulis posticis subrectis, basi utrinque anguste impressa et punctulata, elytris striatis, interstitiis subplanis. Long. '40.

One male; California; Mr. A. Murray. This species has the form of *A. baltimorensis*, but the basal impressions of the thorax, instead of being large rounded foveæ, are narrow, and the punctures are confined to the depth of the impressions. The color of the head and thorax is almost black; the rest of the body has a decided piceous tinge.

7. *Harpalus fraternus Lec.* This species has an extensive range, being found in Oregon, Kansas, Nebraska and New Mexico; a somewhat immature specimen from the last named locality was described by me as *H. oblitus*.

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8. *Bembidium paludosum*. A specimen from Oregon, given me by Mr. Ulke, only differs from those found at Lake Superior, by the thorax being a little less transverse, and a little more narrowed in front. In a European specimen before me, the thorax is slightly and equally narrowed before and behind, and is but little broader than its length; the single specimen from Lake Superior, described by me as *B. lacustre*, exactly agrees with it in these respects. It is impossible to say with the limited series of specimens before me whether these three forms should be considered as races or species.

9. *Bembidium quadrulum*, æneo-nigrum, nitidum, thorace minus convexo latitudine brevior, subquadrato, postice vix angustato, lateribus late rotundatis, angulis posticis subrectis, basi utrinque biimpresso, carinulaque ad angulum munito; elytris thorace latioribus parum convexis, striis fortiter punctatis, ad apicem obliteratis, 3ia bipunctata, 7ma ad apicem exarata. Long. .20.

East of Fort Colville; Mr. Gibbs. This species has the same size, shape, color and sculpture as *B. salebratus* Lec., except that the striae of the elytra are obliterated at the tip, and the thorax is less rounded on the sides, scarcely perceptibly narrowed behind, with the hind angles more nearly rectangular. The inner basal impression is deep, and the outer one small; the posterior transverse impression and the dorsal line are deeply impressed. The eighth and ninth striae of the elytra are approximate, but do not unite until very near the shoulder.

10. *B. dyschirinum*, elongatum, convexum, nigro-æneum, pernitidum, thorace transverso cordato, postice angustato, lateribus rotundatis ad angulos posticos rectos breviter sinuatis, basi utrinque profunde foveato, et carinula externa munito, elytris ovalibus, thorace paulo latioribus seriatim punctatis, postice lævibus, interstitio 3io bipunctato, tibiis tarsisque nigro-testaceis. Long. .19.

East of Fort Colville; one specimen. Allied to *B. nitens* Lec. (*Peryphus picipes* †Mann.), but is smaller and more convex, with the sides of the thorax less sinuate towards the hind angles, and the base free from punctures.

11. *Agabus morulus*, latiusculus, subovatus, niger, nitidus, haud reticulatus, dense subtiliter punctulatus, antennis palpis tarsisque piceo-rufis, elytrorum seriebus punctorum fere obsoletis. Long. .22.

California; Mr. Murray; one specimen. Resembles in form *A. obtusatus*, but is less obtuse anteriorly, and not at all reticulated; the anterior tarsi of the male are but very slightly dilated, and the claws are not deformed. There is no appearance of elytral spots. The body is equally attenuated before and behind.

12. *Agabus lineellus*, regulariter ovalis, piceo-ferrugineus nitidus, subtilissime, reticulatus, elytris testaceis, sutura et vittis utrinque 4 angustis nigris antice abbreviatis, nebulisque externis piceis ornatis, seriebus punctorum solitis distinctis, sternis piceis. Long. .30.

California; Mr. Murray; one male. The only other vittate species found in the United States is *A. tæniolatus* Harris, from which this is abundantly distinct by the narrower vittæ occupying only the inner two-thirds of elytra; the meshes of the reticulation are not so small; the head and thorax is clouded with darker color as in that species.

13. *Agabus confertus*, ovalis, modice convexus, æneo-niger nitidus, dense punctulatus, haud reticulatus, thorace minus fortiter marginato, latitudine fere triplo brevior, elytris lineola laterali guttaque postica pallidis ornatis, seriebus punctorum solitis distinctis, antennis ore pedibusque anticis piceo-rufis. Long. .32.

Cabo de los Reyes; Mr. G. Davidson; one male. Of the same form and size as *A. semivittatus* Lec., but with the thorax shorter, more strongly nar-

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rowed in front, and less strongly margined at the sides, and the upper surface of the body much more strongly punctulate; the sides of the thorax also form a very obtuse angle with the sides of the elytra. The sexual characters are also different; in the present, the claws of the anterior tarsi of the male are long and slightly deformed; in *A. semivittatus* they are not elongated, but the inner one is toothed at the base. The trochanters and thighs of the middle and hind legs are tinged with reddish brown.

14. *Agabus discors*, elongato-ovalis, minus convexus, æneo-niger, dense minus subtiliter reticulatus, thorace lateribus modice rotundatis margine crassiore rufescente, ad basin elytris vix conspicue angustiore, his longitudinaliter reticulato-strigosis, ore maculis que solitis verticalibus piceo-rufis, pedibus rufo-tinctis. Long. .40.

Mas nitidus, elytris thoracisque lateribus profundius strigosis, tarsis anterioribus modice dilatatis, unguiculis anticis valde elongatis subsinuatis. Femina opaca quasi velutina, elytris minus profunde strigosis.

Washington Territory; Mr. Gibbs. A very distinct species.

15. *Helophorus alternatus*, elongatus, capite rugoso, viridi-æneo, cupreo variegato, thorace latitudine fere sesqui brevior, postice subangustato, lateribus late rotundatis margine depresso latiusculo testaceo, angulis posticis subobtusis, præcipue versus latera granulato viridi-æneo, lineis 5 solitis latis profundis aureis, intermediis sinuatis, elytris elongato-ovalibus thorace parum latoribus, testaceis, fusco-nebulosis, vel piceis testaceo-maculatis, striis profunde crenatis, interstitiis seriatim punctulatis, 2do et 4to latoribus et minus convexus subtus niger, antennis palpis pedibusque pallidis. Long. .14—.15.

California; Mr. Murray. This species is more elongated than *H. lineatus*, and is readily known by the elytra being somewhat wider than the thorax, more regularly oval than usual, with 2d and 4th intervals wider and less convex than the others.

16. *Hydrocharis glaucus*, ovalis, convexus, supra nitore argenteo-cœruleo glaucus, thorace lateribus magis rotundatis, basi recta angulis posticis obtusis et rotundatis, punctis paucis versus latera notato, elytris striis e punctis parvis compositis, interstitiis alternis irregulariter grosse punctatis, alternis punctis paucis minutis impressis; subtus niger, pedibus cœruleo-glaucis. Long. .60.

California; Mr. A. Murray. A very beautiful species with the sides of the thorax more rounded than in *C. substriatus Lec.*, which it resembles somewhat in the sculpture of the elytra, though the striæ of punctures are more distinct, and the punctures of the intervals much larger.

17. *Philhydrus imbellis*, ellipticus, convexus, nitidus, dense punctulatus, capite nigro-piceo, thorace piceo, lateribus pallidis, elytris piceo-ochraceis vix conspicue striatim punctatis, stria suturali antice oblitterata, subtus niger, tibiis tarsisque testaceis. Long. .24.

One specimen; California; Mr. Murray. This species belongs to the group (a, *Lec. Proc. Acad. Nat. Sc. Phil.* 7, 369,) having the mesosternum and prosternum not carinated. It differs from the other species known to me by the faint traces of striæ upon the elytra; the three confused rows of punctures seen in the others are here scarcely observed as separate from the rows of punctures constituting the striæ.

18. *Philhydrus normatus*, ovalis, modice convexus, nigro-piceus, nitidus, vix punctulatus, elytris striis integris 10, scutellarique e punctis digestis compositis, antennarum basi palpisque testaceis. Long. .22.

One specimen; Bodega; Mr. Davidson. The prosternum is not carinated, the mesosternum has a small protuberance near its hind margin. The outer 1861.]

striae of the elytra are deeper than the inner ones, and the intervals in some places are marked with faint traces of obsolete intermediate striae.

19. *Cyllidium nigrillum*, hemisphaericum, nigrum nitidum, elytris parce subtilissime punctulatis, stria suturali profunda antice oblitterata, pedibus piceis. Long. '06.

San Diego, California. The sides of the thorax and elytra are diaphanous, and therefore appear brown by transmitted light.

20. *Cyllidium pallidum*, hemisphaericum, nitidum, capite thoraceque piceis, hoc limbo omni pallido, elytris pallidis, parce subtilissime punctulatis, stria suturali profunda antice oblitterata; subtus piceum, antennis palpis pedibusque pallidis. '05.

At the junction of the Colorado and Gila rivers, California, under stones and pieces of wood, in wet places.*

21. *Thinopinus variegatus*; *Trichocanthus variegatus* Motsch. A specimen found by Mr. Davidson at Bodega differs in many respects from those of *T. pictus* Lec., found by me at San Diego. The head is destitute of the Y-shaped frontal spot, which in *T. pictus* is connected with the occipital transverse spot; the latter is much more defined, and different in shape. The two ring-shaped black spots of the thorax are interrupted opposite the hind angles of the thorax, but the basal portion is complete; in *T. pictus* it is the latter that is absent. The elytra are sparsely but strongly punctured, the lateral margin and a semiannular spot extending from the base to the external hind angle is black; in *T. pictus* the elytra are very feebly punctured, and the elytral spot is annular, interrupted towards the humerus. The spots of the dorsal surface of the abdomen are much larger, than in *T. pictus*.

22. *Hadrotus extensus*. Several specimens found by Mr. Gibbs in Washington Territory differ from the Russian American *H. crassus*, by the body being much more slender, and the thorax comparatively longer. In sculpture I find no difference, but the form of the thorax and body requires them to be regarded as indicating a separate species, to which the present name is applicable.

23. *Staphylinus submetallicus*, æneo-niger, pubescens, capite thoraceque nigro-æneis, confertissime punctatis, illo linea tenui lævi antice oblitterata, hoc latitudine longiore, lateribus parallelis, vitta dorsali nitida lævi; scutello atro-tomentoso, elytris nigro-æneis, densissime subtilius punctatis; abdomine dorso pube subtili aureo-variegato bifariam nigro-maculato. Long. '62.

Tejon; Mr. Xantus, one specimen; another one from Mr. Murray. The outer joints of the antennæ are somewhat transverse.

24. *Staphylinus saphyrinus*, niger pubescens, capite thoraceque læte cyaneis, dense punctatis, illo linea tenui lævi antice oblitterata, hoc latitudine longiore, postice paulo angustato, vitta dorsali nitida lævi, elytris cyaneis densissime subtilius punctatis, abdominis segmentis duobus ultimis, palpis, coxis pedibusque læte rufo-testaceis, antennis piceis basi rufescentibus. Long. '40—'52.

San Jose and Fort Tejon, California. The outer joints of the antennæ are slightly transverse.

25. *Staphylinus luteipes*, niger, pubescens, capite thoraceque olivaceo-

* I add the description of a third species from the Atlantic district.

C. nigriceps, hemisphaericum, supra pallide testaceum nitidum, capite nigro, thoracis disco obscuriore, elytris parce subtiliter punctulatis, stria suturali antice oblitterata; subtus nigro-piceum, antennis palpis pedibusque pallidis. Long. '06.

Lake Superior, one specimen.

æneis, dense fortiter punctatis, illo linea tenui lævi antice oblitterata, hoc latitudine longiore postice paulo angustato, vitta dorsali nitida lævi, elytris confertissime subtiliter punctatis, olivaceo-æneis, abdomine vix maculato, pedibus rufis vel rufo-piceis. Long. '56.

San Jose, California, under bark of oak trees. The ventral segments are sometimes annulate with dark red. The outer joints of the antennæ are slightly transverse. These three species and the next belong to Erichson's 8th family.

26. *Staphylinus pleuralis*, piceo-niger, fusco-pubescent, capite thoraceque dense sat fortiter punctatis, illo linea tenui lævi antice oblitterata, hoc latitudine longiore, postice paulo angustato, vitta angusta dorsali lævi nitida, scutello atro-tomentoso, elytris confertissime subtiliter punctatis, piceis, lateribus late obscure rufis, abdomine supra tomento aureo irrorato, pedibus rufis, coxis piceis. Long. '56—'63.

Oregon. The punctures of the head and thorax are finer than in *S. luteipes*. The golden pubescence of the dorsal segments seems to be generally diffused, so far as I can judge by the specimens before me, and there are faint indications of two rows of velvety black spots.

27. *Liparocephalus brevipennis* *Mäklin*, Bull. Mosc., 1853, 191.

A specimen collected by Mr. A. Agassiz at Cape Mendocino agrees with the description of this species, except that the color is dark brown, and the antennæ are not obviously shorter than the head and thorax. A comparison with a specimen from Russian America will be necessary before it will be proper to express an opinion regarding the specific nature of these differences.

28. *Hister (Platysoma) punctiger*, elongatus, parallelus, parum convexus, niger nitidus, capite parce punctulato fronte vix concava, striola integra, thorace disco punctulato, lateribus parce punctatis, stria marginali ad apicem ambiente, elytris obsolete parce punctulatis, apice punctis paucis, notatis, 6-striatis striis internis duabus ante medium antice abbreviatis (interno longiore) punctoque basali notatis; mesosterni stria marginali integra; pedibus piceo-rufis, tibiis anticis 4-, intermediis 3-, posticis 2-dentatis. Long. '16.

California. Mr. A. Murray. Larger and wider than *H. parallelus*, and much less convex, resembling in form *H. æquus* *Lee*, but much larger and a little more convex.*

AMARTUS. (n. g. Nitidulidæ, trib. Brachypterini.)

Palpi labiales articulo ultimo elongato, ovali; unguiculi simplices, pygidium ♂ segmentulo anali auctum.

The external appearance of the species of this genus described below is that of *Carpophilus*, and very nearly that of *C. niger*, but the absence of antennal grooves will at once distinguish it. The outer lobe of the maxillæ is long and slender, not hooked at the extremity, with a large terminal vesicle. The labial palpi have the first joint short, the second one half shorter than the

*Resembling in appearance this species, but still larger and more convex, with the striæ of the elytra more distinctly punctured, and the sutural striæ shorter than the inner dorsal one is a species from Ohio given me by Mr. Ulke, which I would name

Hister (Platysoma) basalis, elongatus, cylindricus, niger nitidus, capite parce punctato, fronte concava, striola integra, thorace disco parce punctulato, versus apicem et lateribus paulo fortius, stria marginali ad apicem ambiente, elytris ad basim profunde transversim impressis, fere marginatis, 6-striatis, striis punctatis, duabus internis antice abbreviatis (interno brevioribus); mesosterni stria marginali apice deficiente, pedibus, nigris tibiis anticis 4-, intermediis posticisque 3-dentatis. Long. '20.

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third, which is elongate oval; the maxillary palpi have the last joint conical, a little longer than the preceding. The mentum is broad, emarginate in front. The labrum is emarginate, the mandibles flat, not toothed. The club of the antennæ is 3-jointed and elongate, the joints but slightly transverse. The second and third ventral segments are shorter than the first and fourth; the fifth is the longest; in the males a small but distinct dorsal segment is added. The tibiæ are broad and pubescent, with small terminal spurs; the tarsi are dilated, the claws slender, a little broader at the base, but not toothed.

29. *A. rufipes*, ovalis parum convexus nigro-piceus, helvo-pubescent, confertim punctatus, thorace latitudine fere duplo brevior, antice truncato, lateribus et basi rotundatis, elytris thorace sesqui longioribus, lateribus et apice late indeterminate rufo-testaceis, antennis pedibusque rufo-testaceis. Long. .20.

Mendocino, California. A. Agassiz. The surface is equally punctured both above and beneath. The antennæ are as long as the head and thorax united.

30. *Trogosita sinuata*, nigro-picea nitida, depressa, capite thoraceque sat parce punctatis, hoc latitudine paulo brevior, postice parum angustato, lateribus late rotundatis, postice sinuatis, margine fortius reflexo, angulis posticis rectis, basi sinuatim truncata, elytris oblongis, basi late emarginatis, humeris rectis, striis punctatis haud impressis, interstitiis planis, parce rugulosis, biserialiter subtiliter punctulatis, antennis pedibusque piceo-rufis, illis clava triarticulata. Long. .28.

East of Fort Colville, one specimen; Mr. Gibbs. This species resembles in appearance *T. corticalis* Mels., and several others from the Atlantic States, but is easily known by the thorax being less transverse and less narrowed behind, with the hind angles more prominent, and the base not rounded, but nearly truncate and sinuate, and slightly emarginate at the middle.

31. *Trogoderma ornatum* Lec. Proc. Acad. Nat. Sc. Phil. 7, 110.

A specimen of this species from California, differing from those found in New York, by the spots of white hair being larger, was sent me by Mr. A. Murray.

32. *Cryptorhopalum nigricorne*, ovale convexus, nigrum pubescens, subtiliter dense punctatum, thorace lateribus oblique late rotundatis, tarsis piceis, antennis nigris basi piceis. Long. .09.

California, one specimen; Mr. Murray. Differs from *C. triste* and *piceicorne* Lec. (Proc. Acad. 7, 111), by the surface being more finely punctured both above and beneath, by the sides of the thorax being less rounded, and by the club of the antennæ being black.

33. *Orphilus subnitidus*, ovalis convexus, antice obtuse attenuatus, niger subnitidus, thorace punctulato, ad basin vage arcuatim impresso, angulis posticis paulo prolongatis, lateribus subexplanatis, valde declivibus, elytris sat subtiliter punctatis, dorso ante medium vage impressis. Long. .13—.16.

Le Conte, Classification of Coleoptera of North America, 109.

California and Oregon. Broader, larger and more finely punctured than *O. ater* Er.

34. *Syncalypta albopunctata*, ovalis, utrinque attenuata, convexa, nigra, fusco-squamulosa, setis clavatis longiusculis nigro-piceis hispida, elytris guttis pluribus parvis argenteo-squamosis ornatis, capite thorace que dense punctatis, elytris striis tenuibus, suturali postice externisque profundis. Long. .11.

Washington Territory, one specimen; Mr. Ulke. Larger than *S. echinata* Lec., with the thorax more coarsely and densely punctured; easily known by the silvery white spots of the elytra.

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35. *Dorcus mazama* (♂) nigro-piceus, capite punctato, thorace vix angustiore, mandibulis apice acutis, dente parvo medio armatis, thorace latitudine plus duplo brevior, postice angustiore, lateribus medio obtuse angulatis, angulis posticis rectis, disco modice, versus latera sat dense punctato, elytris modice punctatis subtiliter rugosis, tibiis anticis 4-dentatis, et dente superiore obsoleto munitis, tibiis posterioribus dentibus 3 lateralibus apicalique acutis armatis. Long. (mand. excl.) 1.20

New Mexico, Mr. Ulke, one male. This species is alluded to by me on page 120 of my Classification of the Coleoptera of North America, as belonging to *Lucanus*, but the form of the labrum, which is rectangular and about four times as broad as its length, requires it to be placed in *Dorcus*. The outline of the thorax differs very greatly from that of our other species, in which the sides are simply and broadly rounded: in the present species the form is as in *Lucanus dama*, but a little more dilated on the sides. The third tooth of the middle and hind tibiæ is double, that is, there are two sharp teeth placed transversely, so as to present the appearance of a single tooth.

36. *Platycerus coerulescens* (♂), niger, capite thoraceque parce grosse punctatis, hoc transverso, lateribus antice rectis paulo convergentibus, pone medium inflexis, angulis posticis obtusis haud rotundatis, elytris nigro-cyaneis, punctis striatim digestis, interstitiis irregulariter subseriatim punctatis; mandibulis sursum incurvis, dente infero pone apicem, alteroque superno armatis. Long. (mand. inclus.) .48.

Tejon and Vallecitas, California. Closely related to *P. quercus*, but the punctures of the head and thorax are much more distant, the lateral margin of the thorax is narrower, the elytra are not at all rugous, and there are no denticles between the apex of the mandibles and the tooth on the inferior margin: the 6th joint of the antennæ is transverse as in *P. quercus*, and the club consists of four joints.

37. *Platycerus Agassii* (♀) elongato-ovalis, supra obscure æneus, capite thoraceque sat dense punctatis, hoc linea dorsali lævi, latitudine duplo brevior, lateribus fortiter marginatis valde rotundatis, angulis posticis rectis prominulis, elytris obsoleto striatis, striis punctatis, interstitiis rugosis confuse punctatis; tibiis posticis denticulo externo ad medium armatis. Long. .38.

One specimen, San Mateo, California, Mr. A. Agassiz. Closely related to *P. depressus* Lec. (with which *P. oregonensis* Westwood is probably identical), but differs by the thorax being wider, with a distinct dorsal smooth line, by the interstitial punctures of the elytra being smaller, but especially by the hind tibiæ having a small sharp tooth about the middle on the outer edge. The seventh joint of the antennæ is not transverse, and the mandibles are small and acute, without teeth.

DASYDERA Lec.* (n. g. Scarabæidæ Glaphyrini.)

Antennæ 10-articulatæ, clava maris scapo haud brevior triarticulata, articulis haud approximatis; palpi maxillares articulo ultimo ovali, majusculo, extus profunde excavato; mandibulæ parvæ obtusæ; labrum late emarginatum. Unguiculi basi latiores, haud dente armati.

The species of this genus resembles precisely in form *Lichnanthe vulpina*, but is still more hairy: the characters are entirely as in *Lichnanthe*, except that the club of the antennæ is larger, the labrum is less deeply emarginate, the maxillary palpi are thicker, and the last joint is oval instead of elongate, and the claws are not toothed at the base.

38. *D. ursina*, nigra, pilis longissimis pallidis sericeis dense tecta, capite thoraceque confertissime subtilius punctatis, elytris pallide testaceis, subgla-

* Class. Col. N. America, p. 133.

bris, sat parce punctatis, abdomine brevioribus, apice dehiscens obtuse rotundatis, tibiis tarsis antennisque rufo-testaceis, his basi nigris. Long. .52.

California, one male, Mr. A. Murray. The abundance of hair conceals the form of the thorax, which appears to be more gradually narrowed in front than in *Lichnanthe vulpina*.

39. *Diplotaxis insignis*, oblongo-ovata, convexa, rufo-ferruginea, nitida, capite confertim fere grosse punctato, clypeo marginato, antice subtruncato, sutura frontali profunda, fronte transversim vix elevata; thorace fortiter punctato, brevi, ante medium valde angustato, lateribus obliquis ad medium obtuse angulatis, angulis posticis obtusis, anticis acutis, ad apicem marginato, elytris fortiter parcius punctatis, vix tricostatis, tibiis anticis tridentatis dente ultimo oblique truncato, unguiculis medio breviter dentatis. Long. .52.

Salt Lake Desert. Resembles at first sight an immature specimen of *D. brevicollis Lec.*, but belongs to a very different group of species, being related to *D. Haydenii Lec.* (Journ. Acad. 2d ser. 3, 272). It differs from the last named by the larger size, by the head and thorax being much more thickly and coarsely punctured, and by the elytra being more sparsely punctured; the usual smooth lines of the latter are scarcely elevated, and are marked with a row of small punctures.

40. *Phobetus testaceus*, longius ovatus, convexus, flavo-testaceus nitidus, capite sat dense punctato, clypeo rotundato fortiter marginato, thorace parce subtiliter punctato, apice valde marginato, lateribus pilis longis fimbriato, elytris parce haud profunde punctatis, lineis solitis laevibus, margine laterali et basali longe flavo-pilosis, stria suturali profunda; pygidio parce subtiliter punctulato, et piloso; pectore pedibusque longissime pilosis, antennis 10-articulatis. Long. .58.

One male, Santa Cruz Island, California; Mr. C. M. Bache. Differs from *P. comatus Lec.* by the 10-jointed antennæ, by the thorax being pilose only along the side margins, more finely punctured, without any large punctures at the anterior part, and by the pygidium being very finely, scarcely distinctly punctured.

A female with 9-jointed antennæ, from Oregon, differs from the type of *P. comatus* by the head being less coarsely and not confluent punctured, and by the punctures and smooth ribs of the elytra being quite well marked. I am not willing, in the absence of other specimens, to consider it as a distinct species.

41. *Cyclocephala hirta*, oblongo-ovalis, testacea convexa nitida, pilis flavis parce vestita, clypeo confluent punctato antrosum sensim angustato, lateribus anguste, apice obtuso fortius marginato; thorace latitudine duplo brevior antice angustato, lateribus valde rotundatis, parce punctato, elytris punctatis, vittis solitis laevibus. Long. .50.

One male, California, Mr. A. Murray. A very distinct species. The club of the antennæ is as long as the inferior portion, and the last joint of the anterior tarsi is large and tumid, with unequal claws. The frontal suture is well marked; the clypeus is confluent punctured; the head behind the suture is slightly convex, coarsely but not densely punctured.

42. *Chrysobothris vulcanica*, depressa subtus nigro-cuprea, supra æneo-nigra, fortiter punctata, thorace brevi cicatricoso vage 3-canaliculato, costis parcius punctatis, lateribus utrinque incurvis, elytris lineis solitis elevatis interruptis, nitidis punctis paucis notatis transversim connexis, spatiis depressis sat dense punctatis, cinereo-tinctis, postice serrulatis, apice singulatim rotundatis. Long. .60—.63.

East of Fort Colville. Mr. Gibbs. Allied to *C. dentipes* and *californica*, with the elytra sculptured as in the latter, but with the elevated parts of the thorax rugous and punctured, though not so thickly as the depressed portions.

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43. *Elater mœrens*, ater, parum nitidus, subtiliter cinereo-pubescent, thorace latitudine haud brevior, convexo, confertim fortiter punctato, postice vix canaliculato, elytris antice parallelis, profunde punctato-striatis, interstitiis convexiusculis rugose punctatis, antennis articulo 3io 2ndo sesqui longiore, tarsisque fuscis. Long. .46.

East of Fort Colville, and at Sinyak water depot. Mr. Gibbs. Precisely resembles *E. luctuosus* *Lec.*, except that the pubescence is finer and cinereous, instead of brownish gray, and that the third joint of the antennæ is a little longer, and the thorax a little more rounded on the sides.

44. *Elater dimidiatus*, niger nitidus, pube brevi griseo-fulva haud dense vestitus, thorace latitudine vix brevior, lateribus magis rotundatis, fortiter haud dense punctato, postice canaliculato, elytris antice parallelis, profunde punctato-striatis, interstitiis paulo convexis, rugose punctatis; a basi usque ad medium rufo-testaceis, tarsis fuscis, antennis articulo 3io 2ndo sesqui longiore. Long. .36.

One specimen, Oregon. Related to *E. apicatus*, but the thorax is more rounded on the sides, and less closely punctured. The orange color of the elytra reaches only to the middle, and extends farther along the sides than the suture.

45. *Cardiophorus longior*, elongatus, niger nitidus, subtiliter cinereo-pubescent, thorace latitudine conspicue longiore, convexo, lateribus late rotundatis, antice posticeque æqualiter parum angustato, confertim subtiliter punctulato, elytris thorace vix latioribus fortiter punctato-striatis, interstitiis paulo convexis subtilissime punctulatis, antennarum articulo 2ndo, genubus, tibiæ apice tarsisque fusco-testaceis. Long. .31.

Bitter Root Valley, at the head of the Missouri. Mr. John Pearsall. The specimens furnished me, like all those collected by Mr. Pearsall, who was attached to Lieut. Mullan's expedition, which have passed through my hands, are in excessively bad condition, and I am therefore not able to fix the characters of this species with precision. It is related to *C. tumidicollis* and *gagates* *Lec.*, but differs by the much longer thorax, which is equally narrowed before and behind. From the Californian *C. tenebrosus* *Lec.* it differs by the same character, as also by the color being pure black. The hind angles are but slightly prolonged, the basal lines are moderately long, and the thorax is channeled at the base.

As several specimens of other insects, in the collection of Mr. Pearsall, had lost their color from some material in which they were preserved, it is possible that the antennæ may be found to be entirely black in those which are well kept.

46. *Melanotus variolatus*, nigro-piceus, elongatus, griseo-pubescent, fronte subplana punctis grossis umbilicatis confertis impressa, thorace latitudine parum longiore, lateribus parallelis antice rotundatis, confertim grosse punctato, punctis umbilicatis, postice subcanaliculato, angulis posticis carinatis haud divergentibus, elytris fortiter punctato-substriatis, interstitiis parum convexis parce punctatis, pedibus rufis; antennarum articulo 3io 2ndo sesqui majore subtriangulari. Long. .45—.55.

San Pedro, California, Mr. C. M. Bache. Related to *M. oregonensis* and *longulus*, but differs from the first by its rufous feet, and more densely punctured thorax, and from both by the sides of the thorax being more rounded, with the hind angles not diverging.

The thorax of the female is broader, more convex and more rounded on the sides than that of the male.

47. *Pityobius Murrayi*, niger subnitidus, subtiliter vix conspicue pubescens, thorace fortiter punctato, latitudine longiore lateribus late rotundatis, angulis posticis productis divergentibus, carinatis, profunde canaliculato, 1861.]

medio valde excavato, et utrinque ante medium fovea magna impresso, elytris striis punctatis, interstitiis paulo convexis, dense rugose punctatis, antennis articulo 3io 2ndo duplo majore. Long. ♂.78, ♀1.42.

Mas antennarum articulis 4—11 ramo subbasali interno, duobusque externis, uno basali, altero pone medium ornatis.

Femina antennis serratis.

California. The male from Mr. Murray, the female from Mr. Rathvon.

48. *Limenius discoides* rufo-testaceus, opacus, pallide pubescens, capite fortiter punctato, occipite nigro, fronte plana antice recte truncata, thorace fortiter dense punctato, latitudine longiore antrorsum angustato, lateribus late rotundatis angulis posticis brevibus carinatis, convexo, macula ovali dorsali nigra, elytris striis punctatis, interstitiis haud convexis, profunde punctatis, antennis piceis, articulo 3io 2ndo plus sesqui longiore, postpectore piceo; prosterno suturis antice excavatis. Long. .40.

Rocky Mountains, at the head of Missouri River; for this beautiful species, I am indebted to Mr. H. Feldmann.

49. *Dolopius ferrugineipennis*, elongatus, niger, cinereo-pubescens, capite thoraceque dense punctatis, hoc latitudine longiore, a medio antrorsum angustato, lateribus late rotundatis, angulis posticis elongatis divergentibus fortiter carinatis, elytris rufo-testaceis, striis punctatis, interstitiis subconvexis dense punctatis, antennis (?) pedibusque flavo-testaceis. Long. .42.

Oregon. A specimen with only the basal joint of the antennæ remaining. Easily distinguished from our other species by the form of the thorax.

50. *Asaphes tumescens*, nigro-piceus, fusco-pubescens, capite thoraceque fortius sat dense punctatis, hoc (feminæ) convexo, latitudine paulo longiore postice canaliculato, lateribus rotundatis magis ad apicem, versus basim paulo angustato, angulis posticis acutis parallelis fortiter carinatis, elytris striis punctatis, interstitiis paulo convexis punctulatis, antennarum articulo 3io 2ndo duplo longiore et 4to paulo angustiore. Long. .49—53.

Santa Cruz Island, California. Mr. Bache. Closely allied to the dark varieties of *A. decoloratus*, but the head and thorax are much more strongly punctured. The second joint of the antennæ is shorter, being only half as long as the third, and the striæ of the elytra are more strongly punctured.

51. *Asaphes oregonus*, niger, pube longiore fulva suberecta vestitus, capite fortiter thorace sat dense subtilius punctato, hoc angulis posticis carinatis paulo divergentibus, elytris flavo-testaceis, striis subtilius punctatis, interstitiis planis rugosis et punctulatis; antennarum articulo 3io 2ndo sesqui longiore, pedibus fusco-piceis, tibiis partim, tarsisque fuscis. Long. .32—40.

Mas thorace latitudine longiore, antrorsum sensim angustato, lateribus late rotundatis.

Femina thorace latitudine fere brevior, convexiore apice magis angustato, lateribus magis rotundatis.

Oregon.

Sericosomus flavipennis. A specimen from Mr. Murray agrees with the description of *Dolerosomus flavipennis* Motsch. (Bull. Mosc. 1860,) except that the apical margin of the thorax is not testaceous. The color is variable in our common *S. silaceus*, so that I am not inclined to consider my specimen as a distinct species from that described by Mr. Motschulsky. It is closely allied to *S. silaceus*, but differs by the antennæ being nearly black, and by the thorax being less deeply punctured, with the hind angles less diverging, (but is perhaps merely a variety of *S. debilis* Lec., Proc. Acad. Nat. Sc., 1859, 72;) the latter is of a pale testaceous color, with only the head obscure. These variations in color are all seen in *S. silaceus*.

52. *Corymbites colossus*, niger, capite thoraceque subnitidis, fortiter

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punctatis, fronte late concava, thorace (♀) convexo vix obsolete canaliculato, latitudine haud brevior, apice angustior, lateribus modice, magis ad apicem rotundatis, angulis posticis paulo divergentibus fortiter carinatis, linea lævi dorsali obsoleta postice notato, elytris fere opacis, dense punctatis et rugosis, punctis vix majoribus striatim digestis, antennis thorace brevioribus, valde serratis, articulo 3io 2do sesqui longiore, haud dilatato. Long. 1.07.

California. Mr. S. S. Rathvon. The joints of the antennæ 4-10 are very strongly triangular, gradually smaller; the eleventh joint is also triangular, with the oblong appendage still more distinct than usual.

53. *Corymbites conjungens* Lec. A specimen of this species was sent by Mr. Murray, in which the entire prothorax is of a brownish red color. Were it not for the slightly pubescent surface, I should consider this species as *Diacanthus diversicolor* Esch., a species which has not been identified in recent times, but which may be more nearly allied to *C. rotundicollis*.

54. *Corymbites anthrax*, elongatus, niger, nitidus, pube brevissima cinerea parce obsitus, capite fortiter dense punctato, fronte fere plana, thorace lateribus confluentibus medio parcius fortiter punctato, oblongo, latitudine vix sesqui longiore, lateribus subrectis, angulis posticis acutis divergentibus carinatis, elytris striis punctatis, interstitiis subplanis disperse punctatis, antennis modice serratis articulo 3io 4to paulo longiore. Long. .75.

Bodega, California; one female. Mr. G. Davidson. Almost as slender in form as *C. pyrros*.

55. *Aplastus optatus*, fuscus, pube cinerea vestitus, thorace latitudine haud longiore, antrosum sensim angustato, lateribus rectis, angulis posticis elongatis carinatis valde divaricatis, punctato, canaliculato, elytris substriatis, interstitiis subplanis rugose punctatis. Long. .52—.70.

Mas oculis prominulis valde convexis, antennis articulis 3-10 apice externo paulo productis.

Femina oculis minus convexis, antennis articulis triangularibus.

California, Mr. A. Murray. Bodega, Mr. Davidson. Differs from *A. separatus* Lec. (Proc. Acad. 1859, 73), by the less elongated thorax and more distinctly carinated posterior angles.

56. *Sandalus californicus*, niger parce pubescens, thorace latitudine summa duplo brevior, a basi antrosum fortiter angustato, lateribus rectis, subcanaliculato, apice et basi vage impresso, parce punctato, dense punctulato, elytris flavo-testaceis nitidis fortiter punctatis. Long. .60.

California, Mr. Murray; one male. Resembles in sculpture the male of *S. niger*, but is more robust in form, the pubescence is much less dense, the thorax is very transverse, and the antennæ are black.

57. *Macropogon piceus*, nigro-piceus, nitidus, fusco-pubescens, capite fortiter punctato, thorace latitudine brevior, trapezoideo, antrosum angustato, basi bisinuato, lateribus rectis, angulis posticis acutis, sat dense punctato, foveis duabus posticis obliquis densius punctatis notato, elytris subtiliter striato-punctatis, interstitiis rugosis et punctulatis, antennis elongatis, articulis 2-4 conjunctis 5to longitudine æqualibus. Long. .31.

East of Fort Colville, Mr. Gibbs. This genus was placed by Motschulsky (Bull. Mosc. 1860) among the Elateridæ; it in reality belongs to the Dasyliidæ, vide Classif. of Coleoptera of N. America, page 178.

58. *Calopteron megalopteron*, nigrum, thorace minuto carinato, lateribus flavis late reflexis, latitudine vix brevior, angulis posticis acutis valde divergentibus, elytris flavis corpore duplo longioribus, a basi sensim valde dilatatis, lateribus extrorsum concavis, apice valde rotundatis, reticulatis, costis solitis elevatis, fascia ad trientem anticam, trientemque posticam cyaneo-1861.]

nigris, trochanteribus femorumque basi flavis. Long. (elytr. inclus.) .47—.62; lat. elytr. max. .36—.50.

Oregon. Differs from our other species by the much larger size of the elytra, which are so much dilated behind that their greatest width is but little less than their length, and the lateral outline is decidedly concave. The sides of the thorax before the angles are nearly parallel; the apex, as usual, is semi-circular.

59. *Podabrus torquatus*, niger (cinereo-pubesceus?), nitidus, capite flavo, antice lævi pone antennis fortiter punctato, cervice nigro-piceo, thorace flavo latitudine plus sesqui brevior, lateribus rotundatis late reflexis, angulis anticis rotundatis, posticis dentiformibus prominulis, antice late transversim concavo et parce punctulato, basi marginato, pone medium linea dorsali profunda impresso, elytris subtilius rugose punctulatis, abdominis lateribus anoque pallidis, pedum antennarumque basi testacea; his articulo 3io 2ndo duplo longiore, at 4to brevior, palpis nigris basi flavis. Long. .38.

Bitter Root Valley, Rocky Mountains. Lieut Mullan's Expedition; collected by Mr. Pearsall. The pubescence has been all removed. The claws are pale yellow, and cleft, with the under portion scarcely shorter than the upper.

60. *Podabrus mellifluus*, niger opacus cinereo-pubesceus, capite ante antennis flavo, parce punctato, postice fortiter punctato, thorace latitudine duplo brevior, lateribus late rotundatis, angulis anticis rotundatis, posticis obtusis haud prominulis, confertim subtiliter punctato, lateribus late rufotestaceis; elytris dense subtiliter rugose-punctatis. Long. .40.

California, Mr. Murray. Quite distinct by the above characters from any other species found within the United States. The third joint of the antennæ is longer than the second, but shorter than the fourth; the first three joints are testaceous beneath: the claws are cleft, the under part scarcely shorter than the upper.

61. *Podabrus scaber*, elongatus, niger opacus cinereo-pubesceus, capite ante antennis fere lævi utrinque testaceo, postice dense punctato, collo valde elongato, thorace latitudine haud brevior, lateribus postice rectis antice rotundatis, angulis posticis rectis vix prominulis, confertim punctato, antice transversim late concavo, postice linea dorsali impressa, lateribus late rufotestaceis, elytris dense granulato-rugosis. Long. .42.

Oregon. The first joint of the antennæ is yellow beneath, the third joint is one-half longer than the second, and not shorter than the fourth; the claws are acutely toothed about the middle.

62. *Podabrus cornutus*, valde elongatus, supra testaceus nitidus, capite antice lævi, postice piceo sat fortiter punctato, thorace latitudine haud brevior, lateribus late rotundato, angulis posticis acutis, vix punctulato, antice, ad latera, et disco late concavo, inde obtuse bicostato, elytris confertim rugose punctulatis; subtus niger, trochanteribus, femorum apice, tibiisque anticis testaceis; tarsis antennisque fuscis, his basi testaceis. Long. .38.

California, Mr. S. S. Rathvon. Bears a striking resemblance in appearance to *Telephorus larvalis* Lec. The third joint of the antennæ is intermediate in size between the second and fourth; the claws are cleft, with the inferior portion but little shorter than the superior.

63. *Podabrus macer*, valde elongatus, niger opacus cinereo-pubesceus, capite confertim punctulato, thorace latitudine longior, lateribus fere rectis parallelis pallide testaceis, angulis anticis rotundatis, posticis obtusis, punctato, antice posticeque late transversim concavo, disco pone medium costis duabus magnis obtusis elevatis, elytris dense rugose punctulatis, antennarum articulo 3io 2ndo duplo longior, at sequente paulo brevior. Long. .31.

San Mateo, California, Mr. A. Agassiz. The antennæ are not much shorter

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than the body, the legs are long, and the claws are furnished with a large square tooth at base, extending beyond their middle.

64. *Malthodes transversus*, nigro-piceus, cinereo-pubescent, thorace flavo, latitudine fere duplo brevior, undique marginato, lateribus fuscis rectis parallelis, disco oblique biimpresso, elytris rugose punctatis, antennis pedibusque fuscis, illis articulo 1mo testaceo, sequentibus aequalibus. Long. .11. Santa Cruz Island, Mr. Bache.

65. *Thanasimus rubriventris*, niger, pubescens, capite thoraceque subtiliter punctatis, elytris dense punctulatis, striis externis ultra medium extensis, internis valde abbreviatis, sutura antice, fascia angulata antica alteraque latiore prope apicem dense cinereo-pubescentibus, abdomine sanguineo. Long. .30.

East of Fort Colville, Mr. Gibbs. Resembles in form and sculpture *C. nubilus Klug*, but differs by the legs being entirely black, and by the outer rows of punctures of the elytra being longer: the elytra are also more parallel and less convex.

66. *Thanasimus nigriventris*, niger, pubescens, capite thoraceque subtiliter punctatis, elytris punctulatis, striis omnino oblitteratis, sutura antice, fascia transversa ad quadrantem, altera angusta angulata ad medium, maculae magna apicali dense cinereo-pubescentibus. Long. .27—.35.

East of Fort Colville, and in Bitter Root Valley. Of the same shape as the preceding, but differs by the body being entirely black. The usual rows of punctures on the elytra are completely wanting; about one-fourth from the base a broad band of cinereous pubescence extends from the suture nearly to the margin; the suture from the base to the band is also clothed with cinereous hair; behind this band, but about the middle, instead of before the middle, as in the other species, is the usual narrow, acutely angulated band; a large apical spot of gray hair occupies the hindmost fifth of the surface, and extends along the suture higher than on the margin; its anterior outline is angulated, and is transversely truncate at the middle.

In badly preserved specimens the apical spot sometimes appears to be a subapical band, from the rubbing off of the hairs near the tip.

67. *Cupes serrata*, fusco-testacea, piceo-marmorata, squamulis cinereis nigrisque variegata, fronte concava, thorace transverso, lateribus parallelis, angulis anticis acutis divaricatis, apice ad medium late breviter producto, confertim punctato, canaliculato, antice posticeque transversim impresso, elytris cylindricis, foveis seriatis quadratis cancellatis, lateribus versus apicem spinulis acutis armatis serie duplici positis; oculis parvis, antennis corpore duplo brevioribus, cinereo nigroque annulatis. Long. .43—.82.

East of Fort Colville, at Sinyak water depot, and at Camp Kootenay. The variation in size of this remarkable species is very great. Besides the spiculae on the lateral margin, and on the extreme inflexed margin of the elytra, a few are visible on the seventh interstitial line near the tip. The blackish markings are scattered along the interstitial line and a broad band behind the middle is also seen.

It will probably be found on dissection that the characters separating our three species of *Cupes* will warrant them in being considered as belonging to distinct genera. The external characters are very marked; thus in *C. serrata* the head is not tuberculate behind, and is deeply concave between the antennae, which are distant, only one-half as long as the body, and somewhat serrate; the eyes are small. The mentum appears larger and more prominent than in the other two species.

In *C. capitata* the head has a very deeply impressed line between the eyes, and is divided behind into four tubercles; the antennae are about two-thirds the length of the body, stout, but not serrate; the eyes are small.

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In *C. concolor* Westwood, (*cinerea* Say, *trilineata* Mels.) the head is not tuberculate behind, the antennæ are less distant, longer than the body, and filiform, and the eyes are very large.

68. *Philoxylon alutaceum*, elongatum fusco-testaceum, pube helva sericea brevi dense vestitum, elytris alutaceis, vix distincte punctulatis. Long. .20.

California; Mr. A. Murray. Differs from *P. convexifrons* Lec. (*Anobium conv.* Mels.) by the more elongate form, and by the elytra not being distinctly punctulate; in *P. punctulatum* Lec. (*Anobium punct.* Lec.), they are more strongly and less densely punctulate than in *P. convexifrons*.

The genus *Philoxylon* was established by me (Class. Col. N. Am. 205), on the two species just named, which differ in many respects from *Anobium*. It will be recognized by the prothorax not being excavated beneath for the reception of the head; the prosternum before the coxæ is very short, but distinct; the anterior coxæ are contiguous, as are also the middle ones; the tarsi are moderately long, the fifth joint is not flattened, and is as long as the two preceding united; the claws are slender. The antennæ are long, the joints 3—7 are nearly equal, and the 8—11 are together somewhat longer than all the others united.

69. *Eleodes obtusa*, elongata, nigra, capite thoraceque confertim punctatis, hoc ovato, latitudine paulo brevior, lateribus rotundatis, postice obliquis, angulis posticis obtusis, spatio parvo lævi utrinque ad medium notato, elytris postice oblique attenuatis valde declivibus, basi truncatis humeris obtusis, granulis punctisque intermixtis vix seriatim positis; femoribus anticis subtus obtuse angulatis. Long. .60.

California; Mr. Murray; one male. Quite distinct by its characters from all others known to me. The prosternum is slightly prominent behind. The elytra are punctured towards the suture, but behind and at the sides the punctures are replaced by oval elevations of moderate size, which are arranged in rows, though not very distinctly. The epipleural margin is not visible from above, and the humeral angles are not produced.

70. *Eleodes inculta*, nigra, subopaca, capite thoraceque sat dense punctatis, hoc latitudine paulo brevior, lateribus valde rotundatis postice subito breviter sinuatis, angulis posticis obtusis prominulis, basi late rotundato, elytris ovalibus thorace sesqui latioribus, apice attenuatis valde declivibus, humeris late rotundatis, dorso deplanatis punctis granulisque parvis inordinatis insculptis, granulis versus latera breviter piliferis; femoribus anticis muticis, antennis apice parum incrassatis. Long. .57.

Island of Santa Barbara, Mr. C. M. Bache. More nearly related to *E. producta* than to any other known to me; the thorax is, however, less broad, and less rounded on the sides, the humeri are broadly rounded and the epipleural margin is not at all visible from above; the elytra are also more granulated and less punctured, and the antennæ are more slender.

71. *Eleodes hirsuta*, nigra pilis elongatis nigris erectis villosa, capite thoraceque opacis, confertim (hoc fortius) punctatis, thorace latitudine vix brevior, lateribus rotundatis angulis posticis obtusis, elytris ovalibus, subnitidis, confertim inordinatim punctatis, versus latera et apicem submuricatis, femoribus anticis muticis, antennis extrorsum paulo incrassatis. Long. .37— .42.

Mas elytris thorace paulo latioribus, latitudine fere duplo longioribus. Femina elytris thorace plus sesqui latioribus.

Great Salt Lake Desert. The prosternum is slightly prominent behind. From the long hairs with which this species is covered it presents very much the appearance of *Amphidora nigropilosa* Lec.; the anterior tarsi are, however, not at all dilated, and otherwise it presents the characters of *Eleodes*.

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72. *Helops Bachei*, elongatus, nigro-piceus, ænescens, capite thoraceque dense fortiter aciculatim punctatis, hoc parum convexo, latitudine paulo brevior, rotundato, ante basin vage arcuatim impresso, elytris striato-punctatis, interstitiis planis disperse subtiliter punctatis postice tuberculis minutis punctigeris uniseriatim ornatis, metasterno brevi. Long. .34—.50.

Island of Santa Barbara, Mr. C. M. Bache. Very distinct from all the other species known to me; the small tubercles of the elytral intervals in large specimens may be seen almost to the base, in small ones, however, they are sometimes almost entirely wanting, and may be traced only very near the tip. Each little elevation is marked with a point somewhat larger than the scattered punctures of the intervals. The antennæ are slender, very slightly thickened externally. The under surface of the prothorax is densely aciculate; the metasternum is strongly, the abdomen more finely punctured. The male has three joints of the anterior tarsi moderately, and of the middle tarsi very slightly dilated.

73. *Helops pernicens*, nigro-æneus nitidissimus, subtus nigro-piceus, capite confertim punctato, thorace latitudine plus sesqui brevior, antice posticeque truncato, lateribus rotundatis, margine fortius depresso et reflexo postice haud latiore, disperse punctato, elytris oblongo-ovalibus convexis, fortiter marginatis, striis profundis subpunctatis, interstitiis planis vix punctulatis, metasterno brevi. Long. .40.

Oregon. Related to *H. lætus Lec.*, but differs by the thorax being less densely punctured, and by the posterior angles being much more obtuse; the sides curve equally before and behind the middle, and the depressed margin is not wider at the base. The sides of the prothorax are finely and densely striate beneath; the metasternum is strongly punctured; the abdomen is more finely punctured, and is rugous at the sides. Three joints of the anterior tarsi are moderately, of the middle tarsi very slightly dilated in the male.

74. *Helops convexus*, nigro-piceus, ænescens, capite confertim, thorace sat dense punctato, hoc convexo latitudine paulo brevior, antice posticeque truncato, lateribus rotundatis, angulis obtusis rotundatis, elytris ovalibus, convexis, striis subtilibus punctatis, interstitiis planis, pedibus rufo-piceis. Long. .24.

Bitter Root Valley, Rocky Mountains. Lieut. Mullan's Expedition. The sides of the prosternum beneath are densely striate; the rest of the under surface is punctured, and the sides of the abdomen are besides finely rugous.

75. *Cibdelis Bachei*, niger opacus, thorace latitudine vix brevior, antice magis angustato, lateribus rotundatis postice subsinuatis, angulis posticis rectis, parum convexo, tuberculis parvis scabro, elytris lateribus rotundatis, thorace sesqui latioribus, striis subtilibus punctatis, interstitiis tuberculis parvis dispersis. Long. .65.

Island of Santa Barbara, California; Mr. C. M. Bache, to whom I take great pleasure in dedicating this fine species, as a slight acknowledgment for the labor bestowed in making collections on the islands near the coast of California.

Larger and broader than *C. Blaschkei*, and totally distinct in its sculpture. The epistoma is broadly emarginate and nearly conceals the labrum, while in *C. Blaschkei* it is truncate, and the labrum is more prominent; the mentum is broader in front, and feebly emarginate, and the hind feet are more widely separated. I am not disposed to regard these differences as generic.

76. *Uloma longula*, piceo-rufa, elongata, nitida, capite confertim subtiliter punctato, fronte late et profunde transversim impressa, thorace latitudine brevior, antice paulo angustato, lateribus anguste marginatis, sat dense medio subtilius punctato, elytris striis haud profunde punctatis, interstitiis planis obsolete punctulatis. Long. .37.

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California, Mr. Murray. Of the same form as *U. ferruginea* Say, but much larger, with the striæ of the elytra much less strongly punctured, and the intervals only very obsoletely punctulate.

75. *Meloe opaca*, elongata, nigra, opaca, capite medio parce lateribus et postice sat dense punctato, linea longitudinali obsolete impressa, fronte utrinque transversim impressa, thorace latitudine brevior ovato, basi emarginato, sat dense punctato, obsolete canaliculato, dorso vage bifoveato, elytris dense sat fortiter intricato-rugosis, abdomine subtiliter rugoso. Long. .75.

One specimen, Mendocino City, Mr. A. Agassiz.

78. *Meloe barbara*, æneo-nigra, subnitida, capite disperse punctato, thorace oblongo, ad apicem rotundatim angustato, basi emarginato, dorso planiusculo, disperse punctato, obsolete canaliculato, antice vage bifoveato, ad basin impresso, elytris valde convexis, parce rude haud profunde rugosis, abdomine alutaceo-rugoso, antennis (♀) medio parum incrassatis. Long. .60.

Island of Santa Barbara, Mr. C. M. Bache.

79. *Lytta dolosa*, minus elongata, metallescens opaca (nigro-cyanea, olivacea, vel pistacea cupreo-tincta), capite parce punctato, postice canaliculato, gutta frontali flava, basi truncato angulis posticis rotundatis, thorace ovali, latitudine subbreviore, punctis parvis adspersis, subtiliter canaliculato, dorso obsolete bifoveato, elytris thorace fere duplo latioribus dense rugosis et punctulatis, antennis elongatis nigris, extrorsum moniliatis paulo incrassatis, tibiis posticis calcari interno tenui acuto, externo dilatato, obtuso. Long. .42—.58.

California, Mr. Murray; Mendocino City, Mr. A. Agassiz. Very variable in color, sometimes of a greenish bronze, sometimes almost black, with a bluish brassy tinge. The smaller specimens resemble in appearance *L. smaragdula* Lec., but are at once distinguished by the outer spur of the hind tibiæ being much broader and more obtuse.

80. *Tragosoma Harrisii* Lec. A specimen of this species was found by Mr. Gibbs, east of Fort Colville. It probably extends its range across the continent in more northern latitudes.

81. *Pogonocherus regonius*, niger, setis nigris elongatis erectis adspersis, thorace vix calloso, spina laterali brevi obtusa, elytris parallelis punctis magnis parvis, antice confusis postice seriebus paucis ordinatis, fascia lata antica trienteque postico cinereo-pubescentibus, penicellis parvis brevibus triseriatis ornatis; antennis cinereo-annulatis. Long. .28.

East of Fort Colville, Mr. Gibbs. The long hairs with which this species is clothed, and the three rows of bunches of black pubescence seen on the elytra, cause it to resemble in appearance *P. penicellatus* Lec., but the thorax has no very distinct elevations, and the lateral lines are less prominent. The elytra are not gradually narrowed behind, have no costæ, and the bunches of black hair are very short. The anterior band occupies one-third of the surface, except a basal broad triangular space; the punctures not being covered with hair appear black.*

* It may here be proper to state that *Amphionycha subarmata* Lec. (Col. Kansas, 22) from Niagara, on examination of perfect specimens, is found to have the unguis simple, and in fact to belong to the genus *Eupogonius* Lec. The resemblance in appearance to *Amphionycha* is most remarkable, though I have since observed that the genera allied to *Saperda* have the eyes finely granulated, while in *Liopus*, *Eupogonius*, *Pogonocherus* and all allied forms the lenses are much larger, thus causing the eyes to appear more coarsely granulate. A similar difference in structure obtains among the genuine *Cerambycidae*, and by regarding it, many groups may be circumscribed with great precision. I hope shortly to make known some modifications in the natural arrangement of these tribes suggested by this discovery.

82. *Leptura cribripennis* Lec. Two specimens collected by Dr. W. A. Hammond in the Black Hills, have precisely the form and sculpture of this species, but the elytra are black, with the base red; another from Oregon has the elytra entirely black. Finding no differences but those of color, I not only believe these to be merely varieties, but also suppose that *L. canadensis* Fabr. and *L. erythroptera* Kirby (nec Germ.) are corresponding varieties of another species; the entirely black variety of our Eastern species is as yet unknown.

83. *Leptura cubitalis*, elongata, nigra, parce subtiliter cinereo-pubescent, capite thoraceque confertim punctatis, hoc convexo, subcanaliculato, lateribus valde rotundato, antice angustato, fortiter constricto, basi modice constricto, linea dorsali lævi nitida, elytris parallelis apice subtruncatis, sat dense postice subtilius punctatis, antennis tenuibus piceis, basi rufis, pedibus anticis rufis, femoribus apice, tibiis apice externo, tarsisque nigris. Long. .35.

San Mateo, California, A. Agassiz. Belongs to the same division as *L. sphericollis* Say, *L. vibex* Newman (*nitidicollis* Horn, Pr. Ac. 1860, 570) and *L. aurata* Horn.*

84. *Leptura fasciventris*, nigra, fulvo-pubescent, capite thoraceque confertissime punctatis, opacis, hoc convexo subcanaliculato campanulato, apice valde, postice modice constricto, lateribus sinuatis, elytris flavis (♀) subparallelis, thorace fere duplo latioribus apice subtruncatis, dorso antice subdepressis, modice postice subtilius punctatis, flavis fasciis duabus trientem postico nigris, maculaque rotundata utrinque ante apicem flava ornatis; abdomine flavo, plus minusve nigro-fasciato, pedibus rufo-flavis, femoribus crassiusculis; antennis nigro-fuscis, plus minusve testaceo-annulatis, vel testaceis, nigro-annulatis, basi nigris. Long. .40—47.

California, Mr. A. Murray; found also in Oregon. Belongs to the same group as *L. crassipes* Lec., *xanthogaster* Lec., *tibialis* Lec. and *rufula*. The first band is oblique towards the suture, and is about $\frac{1}{4}$ from the base; the second is transverse, situated about the middle; it is broad externally, but scarcely reaches the suture; the outer margin is black from the 2d band, and the suture from the first band. The abdomen is yellow, the base of each segment, especially at the sides, is black, but in one specimen this is observed only on the first and second segments.

85. *Leptura dolorosa*, robusta, nigra opaca, subtiliter cinereo-pubescent, capite confertim punctato canaliculato, thorace antrorsum sensim angustato, lateribus late rotundatis, basi incurvis, apice valde constricto, basi profunde transversim impresso et depresso, disco parum convexo, profunde canaliculato, parce basi dense punctato, elytris planiusculis, apice oblique intus truncatis, subparallelis, sat dense postice subtilius punctatis. Long. .58.

East of Fort Colville, Mr. Gibbs. Related more nearly to *L. biforis* than to any other known to me, though, from its black color, very different in appearance. The disc of the thorax is broadly flattened each side behind the middle.

86. *Leptura (Stenura) carbonata*, elongata, nigra subnitida, subtiliter nigro-pubescent, capite canaliculato, sat dense fortiter punctato, thorace parum convexo, antrorsum sensim angustato, apice constricto, basi fortiter impresso et depresso, linea dorsali angusta lævi, dorso parce, lateribus sat

* To the same division belongs the following species from Lake Superior:

L. pedalis, elongata, nigra, parce fusco-pubescent, capite thoraceque dense punctatis, hoc convexo, subcanaliculato, lateribus rotundatis, antice angustato, apice valde constricto, basi modice constricto, linea dorsali tenui lævi, elytris parallelis, apice subtruncatis, sat dense postice minus fortiter punctatis, antennis nigro-piceis, articulis 3—11 basi testaceis, pedibus rufo-testaceis. Long. .40.

In one specimen the middle thighs are darker.

dense fortiter punctato, utrinque vage deplanato, angulis posticis laminatis, elytris parallelis apice subtruncatis, modice, postice subtiliter punctatis. Long. '73.

Washington Territory. Allied to *L. nigrella* Say, but the head and thorax are not confluent punctured, the elytra are parallel, and are only slightly truncate at tip, and not emarginate as in *L. nigrella*.

87. *Toxotus flavolineatus* Lec. A variety of this species in which the elytra are entirely black, is found in Oregon.

88. *Argaleus lituratus*; *Pachyta liturata* Kirby. Specimens collected in various parts of Washington Territory prove that *A. nitenis* Lec. is merely a variety of this species; the elytra vary from being entirely pale to entirely black.

89. *Acmæops vincta*, elongata, nigra, subtiliter fusco-pubescent, capite thoraceque dense punctatis, hoc latitudine haud brevior, convexo, canaliculato, antice et postice profunde constricto, lateribus obtuse angulatis, elytris fortiter postice subtilius punctato, a basi perparum angustatis, apice subtruncatis, vittis duabus flavis utrinque ornatis sæpe obsoletis, femoribus anterioribus rufis apice nigris, posticis nigris basi rufis. Long. '47—'53.

Bitter Root Valley, Lieut. Mullan's Expedition; also found in Oregon. Narrower than *A. dorsalis* Lec., (Col. Kansas, 21,) with the impressions of the thorax much stronger, and the sides more distinctly angulated.

90. *Acmæops gibbula*, nigra, fusco-pubescent, capite sat dense, thorace parcius punctato, hoc campanulato, apice fortiter constricto, postice transversim impresso, dorso late depresso utrinque subgibboso, linea dorsali lævi, angulis posticis rotundatis prominulis, elytris fortiter postice subtiliter punctatis, (♂) a basi angustatis, apice truncatis, nigro-fuscis, vel obscure rufis, sutura vittaque submarginali obscuris. Long. '35.

Washington Territory, Mr. Gibbs. Allied to *A. proteus*, but the elevations of the thorax are much less prominent, and the flattening of the disc is less decided. Specimens will undoubtedly occur having the elytra pale without any dark vittæ. When the elytra are not entirely dark colored, the base of the thighs is testaceous.

91. *Stenopterus fuscipennis*, niger, subtiliter pubescens, thorace latitudine longiore, antice angustato, lateribus late rotundatis, apice et basi impresso, fortiter punctato, linea dorsali brevi elevata callisque duabus elongatis lævibus, elytris abdomine parum brevioribus longe subulatis, dorso planis, fusco-testaceis, haud dense punctatis, punctis hic inde seriatis, tibiis anterioribus basi testaceis, pedibus posticis flavis, femorum clava tibiæ apice tarsisque nigris. Long. '40.

San Mateo, California, Mr. A. Agassiz. The hind tibiæ are slightly bent, and are roughened with small elevations.

92. *Arhopalus lutosus*, niger, pube brevi virescenti-ochrea undique dense tectus, thorace rotundato, latitudine haud brevior, elytris apice oblique truncatis angulo externo subacuto, antennis pedibusque rufis. Long. '46. Kansas, near the Rocky Mountains.

93. *Crossidius ater*, ater opacus, griseo-pubescent, thorace latitudine brevior convexo rotundato, rude et dense punctato, pilis longis pallidis villosis, elytris confertim antice fortius punctatis. Long. '62.

Utah, Mr. E. T. Cresson. Resembles in form *C. testaceus* and *C. humeralis* Lec., but quite different by its color.

94. *Crossidius pulchellus*, longior, niger, pallide pubescens, thorace latitudine paulo brevior, rotundato, rude punctato, lateribus postice paulo concavis, pilis longis villosis, elytris fortiter ad apicem subtilius punctatis, pallidis, margine basali ad humeros latiore, plagaque communi maxima pos-

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tica oblonga nigris, abdomine rufo, segmentis duobus primis fuscis apice rufis. Long. .37.

Bitter Root Valley, Mr. Ulke. The large spot of the elytra extends two-thirds the length; its anterior outline is angulated at the suture, and slightly concave each side; the lateral outline is straight, and reaches the apex, which is abruptly rounded; the suture is retracted and presents a small tooth.

95. *Clytus mormonus*, niger, parce cinereo-pubescent, capite scabro, carinis duabus frontalibus notato, thorace ovali latitudine longiore, convexo, scabro, elytris subtilius punctatis et rugosis, apice singulatim rotundatis, guttis pluribus parvis cinereo-pubescentibus in fascia ad medium alteraque ad dodrantem digestis; femoribus posticis abdomine paulo brevioribus. Long. .60.

Utah, Mr. E. T. Cresson. The specimen before me has lost nearly all the pubescence, but the species can be readily recognized by the characters above given. The thorax is regularly oval, equally narrowed at base and apex, densely rugosely punctured, without any elevations.

96. *Callidium* (Phymatodes) *Agassii*, robustum, atrum opacum, thorace rude punctato, transverso, lateribus valde rotundatis, elytris basi truncatis, thorace latioribus, ante medium rude, pone medium parce sat fortiter punctatis. Long. .67.

San Mateo, California, A. Agassiz. The elytra behind the middle are still more destitute of lustre than the rest of the surface. The anterior coxæ are separated by the very narrow prosternum. The antennæ are stout, scarcely more than half the length of the body.

97. *Donacia californica*, supra virescente-ænea nitida, thorace quadrato, latitudine paulo brevior, lateribus rectis postice paulo convergentibus, angulis omnibus prominulis, tuberculo antico male definito, postice transverse fortiter, antice modice transversim impresso, dorso parum convexo, obsolete punctulato et rugoso, canaliculato, ante medium transversim impresso, elytris thorace duplo latioribus, planiusculis, apice subtruncatis, punctis inauratis confertis striatis, interstitiis subtiliter rugosis, subtus plumbea. Long. .45.

California, Mr. Murray. Resembles in form and characters *D. proxima Kirby*, but differs by the color and by the thoracic tubercles being less prominent. The upper surface is also not so smooth and shining.

98. *Coscinoptera vittigera*, oblonga, subcylindrica, æneo nigra, cinereo-pubescent, thorace latitudine vix brevior, antrorsum sensim angustato, subtilius punctato, vitta dorsali lævi, elytris confertim punctatis, vitta lata rufa a basi ad apicem extensa ornatis, humeris obscuris. Long. .23.

Bitter Root Valley, Mr. Pearsall.

99. *Pachybrachys analis*, oblongus, convexus niger, subopacus, cinereo-pubescent, capite thoraceque confertim subtiliter punctatis, hoc vitta dorsali lævi, margine laterali testaceo, elytris punctatis subrugosis, hic inde substriatis, lateribus ante medium, apiceque testaceis; pygidio flavo-bimaculato, abdomine apice testaceo, pedibus nigro-flavoque variegatis. Long. .20.

California, Mr. A. Murray.

100. *Pachybrachys viduatus* Suffr.; (*Crypto. bivittatus* Say). A singular variety of this species from California was sent me by Mr. Murray. The middle and posterior spots are united with the vitta, so that the elytra are pale, with the suture and narrow lateral and apical margin, a small humeral spot, and a very broad stripe extending nearly to the tip black.

101. *Chrysomela* (Phædon) *oviformis*, ovalis convexa, supra ænea; cinereo-micans, thorace lateribus distincte, medio fere obsolete punctato, elytris punctis mediocribus striatim digestis, interstitiis parce obsolete punctulatis. Long. .15.

East of Fort Colville, Mr. Gibbs. Less rounded and more convex than our

common *C. viridis*, with the punctures in the rows of the elytra rather larger, and the interstices less finely rugous. The under surface is metallic black, the legs black, with the outer half of the tibiæ and tarsi obscure testaceous in one specimen; in another they are entirely black.

102. *Chrysomela* (*Phædon*) *prasinella*, supra obscure viridi-ænea, ovalis modice convexa, thorace æqualiter modice punctato, elytris punctulatis, punctis vix majoribus striatim digestis. Long. .18.

Oregon, Mr. Murray. Less convex than the preceding, and less rounded than *C. viridis*; differs from both by the middle of the thorax being scarcely less punctured than the sides, and the intervals between the rows of punctures of the elytra being covered with scattered punctures scarcely smaller than those of the rows.

103. *Haltica recticollis*, elongata, supra æneo-fusca, pube flava subhispidâ, thorace latitudine paulo longiore, lateribus serrulatis late rotundatis, angulis posticis rectis, anticis prominulis, modice convexo, grosse punctato, sulco basali transverso profundo, elytris oblongis, thorace haud latioribus striis antice fortiter postice subtiliter punctatis, interstitiis punctulatis; subtus nigra, antennis pedibusque rufis. Long. .12.

California, Mr. Murray. The western representative of our *H. forticornis* Ill. (? *copalina* Fabr.), though very different from that species.

104. *Haltica* (*Crepidodera*) *seminulum*, breviter ovata, convexa, nigro-ænea, cinereo-pubescent, capite convexo fere lævi, thorace transverso, convexo, antrorsum angustato, basi medio producto, fortiter parce punctato, sulco basali transverso profundo, elytris ante medium dorso impressis, striis e punctis majusculis compositis, interstitiis fere lævibus; subtus nigra, antennis pedibusque flavo-testaceis, femoribus nigro-piceis. Long. .09.

California, Mr. Murray.

105. *Haltica* (*Crepidodera*) *macula*, ovata, convexa, nigro-ænea, glabra, capite parce grosse punctato, thorace transverso, convexo, antrorsum angustato, angulis anticis rotundatis paulo prominulis, parce punctato, sulco transverso postice fere oblitterata, striola brevi profunda utrinque notata, elytris striato-punctatis, punctis antice majoribus, apice obscure testaceis, subtus nigra, antennarum basi, tibiis anticis apice, tarsisque piceis. Long. .10.

East of Fort Colville, Mr. Gibbs. Remarkable for the usual transverse furrow of the thorax being almost entirely wanting.

106. *Galleruca carbo*, atra opaca, breviter cinereo-pubescent, thorace transverso, antrorsum angustato, lateribus rotundatis, angulis anticis paulo prominulis, punctato, subcanaliculato, dorso vage biimpresso, elytris parce punctatis, sulco marginali lato haud profundo. Long. .20—.22.

East of Fort Colville, Mr. Gibbs. Resembles *G. sagittaria*, but is entirely black, and the thorax is more rounded on the sides.

107. *Triplax antica*, elongata ovalis, nigra nitida, capite thoraceque haud dense punctatis, hoc transverso antrorsum paulo angustato, lateribus parum rotundatis, elytris subtilius striato-punctatis, interstitiis vix obsolete punctulatis, basi anguste indeterminate rufis, antennis palpis pedibusque rufis, illis clava nigra. Long. .16.

Sinyak water depot, Mr. Gibbs. Totally distinct from any other of our elongate species, which constitute the genuine group of the genus.

108. *Hippodamia spuria*, ovalis, longiuscula, thorace nigro, limbo omni angusto lineisque duabus discoidalibus albis, elytris pallide fulvis, macula communi scutellari elongata, altera humerali, tribusque utrinque pone medium 2, 1, positis nigris, sæpe deficientibus, his nonnunquam varie confluentibus, angulo suturali rotundata, subtus nigra epimeris mediis et posticis pallidis. Long. .20.

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Oregon, Mr. A. Agassiz. This species has the size and form of our common *H. parenthesis*, but the thorax of *H. convergens*. The elytra are more elongate oval in form than in either, and more obtusely rounded at tip; the apical angle is also not at all acute, but on the contrary quite rounded.

The spots of the elytra vary greatly; the scutellar elongate spot is sometimes prolonged on the sutural margin for two-thirds the length; the first and second, or the second and third of the posterior spots are connected sometimes as in varieties of *H. parenthesis*, and specimens will undoubtedly be found in which all three are united to form an arcuated spot. It is also probable that *H. sinuata* Muls. (Cocc. 1011) is an extreme form of this species, having all the spots united into a sinuous vitta; sometimes the spots are entirely wanting. The pectoral and abdominal curved lines are obsolete, and it consequently belongs in the same group with *H. convergens*.

Description of a new Mexican Bat.

BY HARRISON ALLEN, M.D.

In 1842, Prof. Gray described, in the Ann. and Mag. of Nat. Hist., a new genus of bats, which he called *Centurio*, and gave the diagnosis of a new species,—*C. senex*. Both of these were afterwards introduced, with a plate and extended description, in the Zoology of the Voyage of the Sulphur, p. 27. This was the first notice given of a well marked group of Cheiroptera inhabiting the tropical regions of America.* Since that time, Lichenstein and Peters† have published an account of a new species—*C. flavogularis*—coming from Cuba; and M. de Saussure‡ has added a third, under the name of *C. mexicanus*.

A short time since, the author obtained from the collection of the Smithsonian Institution two bats, sent by Dr. Sartorius from Mirador, Mexico. One of these was determined, from the descriptions furnished by M. de Saussure, to be the *C. mexicanus* of that author. The other was an animal resembling the members of the genus in question in many particulars, but differing so markedly in others as to render a special description necessary.

The head in its general expression and arrangement of the facial pleats resembles that of the other species. The greater and lesser transverse frontal ridges are present, the latter being less distinct than in the original plate of Gray, and much less so than in the figure of Lichenstein and Peters. The mesial callosity between the nostrils, the nostrils themselves, the warts, setæ and oval crenations, are all similar in extent and relative proportions one to the other, as in other *Centuriones*. The ear, however, presents some points of difference. The "hatchet-shaped" internal lobe is of the same shape, but possesses longer and thicker hair. The auricle proper is similar, while the tragus is much thicker on the inner than on the outer side, which thickness exceeds that of *C. mexicanus*; and the external lobe is more acute, and has upon its summit a minute, well-defined knob.

But the great point of variance consists in the development of the corrugations beneath the chin. These in the known species are but leathery bands, three in number, running from one side of the neck to the other,—the lower one being the largest and covered with hair. In our animal, in addition to the three above noticed, there are two smaller ones, placed anterior to the rest. On a comparison being instituted between these rugæ, they were found to differ greatly in the degree of their development. Thus, while the first pli-

* Prof. Gray was in doubt as to the nativity of his species, from the fact that bats collected both from Amboina and South America were contained in the same bottle. There can be but little doubt, however, that his animal came from the latter country.

† Abhandl. der Akad. der Wissenschaften zu Berlin, 1834, p. 81, pl. 1.

‡ Rev. et Mag. Zool., 1860, p. 378.

cation commences from a small wart placed midway between the eye and mouth, and extends downwards and forwards to join its fellow of the opposite side in a median callosity, it in our animal is sufficiently large to cover in the angle of the mouth. The second fold commences at the external lobe of one ear, and terminates at the corresponding point of the opposite ear. It possesses in the centre a little pit, which is probably glandular, and corresponds to the cervical sac of *Taphyzous*. This fold in our animal is less distinct than in others, and terminates in the third plication.

It is in the last fold that the chief peculiarity of the new form is discovered. Instead of being but a slight elevation of furred skin, it forms a large hairy mask, which, when elevated, hides the face. It is naked within, furred without. The lower and middle parts are sparsely covered with soft hair, while the upper portion possesses two thick clumps of fine fur, one on either side of the central line. This development of the skin gives the animal a very grotesque appearance. The entire arrangement might with propriety be compared to an ancient vizor surmounted with rosettes.

The thumb is large, the basal joint smallest. It is about the same size as that of *C. mexicanus*; larger than that of *C. flavogularis* and *senex*, judging from their respective figures. The wing membranes have the same beautiful translucent lines upon them, and in the same positions. That portion between the first and second figures is free from pigment. The interfemoral membrane is excised and hairy. No differences are observed in the skull, either in the dentition or contour.

We hesitate in defining the position of this bat. Are we to consider it a new genus, or only a new species of a known one? It would, indeed, seem that such a marked peculiarity would constitute a sign of more than specific value, yet the general conformation of the animal in all other respects to a common type prevents us in exalting it to a position of generic importance. The dentition, the shape of the skull, the markings of the membranes, the facial lines, and even the whitish shoulder tufts, are common to all; and, in fact, the unusual growth of the cervical plicæ and some minute differences in the accessories of the ear, are the only points upon which a generic distinction can be based. So while believing that the differences between this species and any one of those belonging to *Centurio* much greater than those which exist between any two of the species of that same genus, we at the same time do not consider that the mere excessive development of a portion of skin is sufficient to form a genus in mammalia. We, therefore, taking a middle course, insert our new bat in the following table, thus:—

PHYLLOSTOMIDÆ Geoffr.

CENTURIO Gray.

C. senex, Gray.

C. flavogularis, L. and P.

C. mexicanus, De Sauss.

Subgen. *TRICHOCORYS* nob.

C. McMURTRI,* n. s.—General color russet-brown with an inclination to fawn. The hair of the back is thicker than that of the belly, and is tricolored, the base being plumbeous, the centre paler, and the tip subrufous with fawn. The arms and interfemoral membrane are hairy; that of the former with thick and short, that of the latter with long and scanty hair, extending down on the back of the feet. The fur of the belly has a tendency to fawn color, especially near the pubis, where there is a distinct line of this hue. The three shades noticed

* After Prof. McMurtrie, of the Philadelphia High School.

on the back are absent on the belly. The under surfaces of the humerus and interfemoral membrane are also hairy, but less so than above. The mask-tufts are of a delicate fawn grey, while the shoulder tufts are white.

Measurements.

Length from snout to coccyx.....	2.3
“ of interfemoral membrane.....	0.5
“ of outer border of ear.....	0.7
“ of forearm.....	7.0
“ of first joint of thumb.....	0.2
“ of second joint of thumb.....	0.4
“ of third finger.....	3.3
“ of fifth “.....	2.3
“ of inferior extremity.....	1.2
Expanse of wing membranes.....	9.0

Habitat.—Mirador, Mexico.

Note on the Bartram Oak (*Quercus heterophylla*.)

BY S. B. BUCKLEY.

The Bartram Oak (*Quercus heterophylla* Mx.) has long been regarded by most American Botanists as a hybrid. Accompanied by Dr. Procter, Editor of the Journal of Pharmacy, I lately went to Mount Holly, near Burlington, in New Jersey, to see an Oak with leaves of varied forms, many of which correspond in shape with the figure of the Bartram Oak in Michaux's Sylva. It is less than one-fourth of a mile from the depot at Mount Holly, in a thicket near several willow oaks (*Quercus phellos*), of which it is plainly one. It has all the characteristics of body, limbs and acorns, peculiar to the willow oak. Many of its leaves also have the ordinary form of *Quercus phellos*. Michaux, in his description of the *Q. heterophylla*, says that several young plants of the Bartram Oak have been placed in the public gardens to insure the preservation of the species. One of these, which was grown from an acorn of the original Bartram Oak, was planted in the Bartram Garden. Col. Carr, who succeeded Bartram in the ownership and possession of the garden, showed this tree to Mr. Meehan, of Germantown, who had charge of the garden during two years. With Mr. Meehan, a few days since, I visited this tree. It also is a *Quercus phellos*. It has very few lobed leaves, indeed there is scarcely one in fifty of them lobed.

In Mr. Durand's herbarium are specimens of *Quercus phellos* with lobed leaves like the Bartram Oak, which he received from Columbia County in this State, where such forms of the willow oak are said to be quite common along the banks of the Susquehanna. The Bartram Oak is not a hybrid, but a mere form of *Quercus phellos*, which like most American oaks, varies greatly in the shape of its leaves.

Since writing the above I have seen a specimen from the original Bartram Oak, which has both lobed and entire leaves, showing beyond question that it is a form of *Q. phellos*. This specimen is now in the general herbarium of the Academy of Natural Sciences at Philadelphia.

Description of a new species of North American Grouse.

BY GEORGE SUCKLEY, M. D., U. S. A.

PEDICÆTES KENNICOTTI, Suckley. (N. S.)

Kennicott's Sharp-tailed Grouse; Arctic Prairie Fowl. *Tetrao Kennicotti*, Suckley, Mss.

1861.]

Sp. Ch. In size, general form and plumage, greatly resembling the *Pediocetes phasianellus* (Linn.) BAIRD, but differing as follows: In having a broad, bright orange or red patch of naked skin over the eye; by the constriction of the white markings on the feathers about the neck, anterior parts of the breast and shoulders. The dark markings being thus rendered larger, give the bird a general darker hue, which the eye instantly notices. For the opposite reason, specimens of the true *P. phasianellus* at first glance seem very light colored. The feathers of the latter are finely mottled, and the larger spot markings on the neck and breast generally V-shaped. The dark markings on the scapulars, neck, back and tail coverts, are in the more southern species *light brown*, more or less mottled.

In the *P. Kennicotti* there is an excess of black on the feathers of the neck and fore-breast, while the spots of white on the wing coverts and scapulars are larger, on a ground of a *uniform dusky black*, free from fine mottling.

The white spots on the middle of the long anterior feathers of the breast are restricted so as to be very nearly nothing but shaft lines. Each feather has also a narrow border of white. Feathers from the same region on *P. phasianellus* have the white in excess.

Habitat.—Arctic America, near Great Slave Lake. Obtained by Robert Kennicott, Esq., through Mr. Clark, from Fort Rae and Big Island in the Hudson's Bay Company's Territory.

This is a strongly marked species, readily distinguished from the Sharp-tailed Grouse of the United States when a comparison of skins is made. In a few words, this bird may be described as nearly black and white; with scarcely any of the ferruginous and light ochry colors observable in the *P. phasianellus*—what little of the ferruginous or brownish yellow exists being found mostly on the back posteriorly and rump.

It might be supposed that Douglas, in his "Observations on some species of the Genus *Tetrao*," &c. published in the Transactions of the Linnæan Society, vol. xvi. 1833, (read Dec. 16th, 1828), had described this species under the name of *Tetrao urophasianellus*. Indeed, Sir John Richardson so understood it when he said "on examination, Mr. Douglas's 3 specimens in the Edinburgh Museum appeared to me to be merely the young of the Sharp-tailed Grouse with ferruginous plumage." (Richardson, in F. B. A., 1831, 861.) Douglas's description of *T. urophasianellus* was based on birds obtained west of the Rocky Mountains, and found in the same localities as the preceding kind, (*T. urophasianus*, or sage fowl,) "with whom they associate and seem to live in harmony." "The sage fowl," he says, "is plentiful throughout the barren arid plains of the river Columbia, also in the interior of North Carolina. They do not exist on the banks of the river Missouri; nor have they been seen in any place east of the Rocky Mountains." Further discussion regarding the locality whence Douglas's specimens were obtained is scarcely necessary. The following extract from characters assigned to the species by him, however, will set the question at rest:

"Head, neck and back *brownish gray*, waved with bars of a *reddish and darker tinge*." This description by no means applies to specimens of the species now described for the first time; one of the principal features of which being the absence of brownish gray and reddish tints.

Specimens of the true Sharp-tailed Grouse from the Columbia region, and North California, are contained in the Smithsonian collection. They agree remarkably well with each other, and with those from the Rocky Mountains, Missouri river and Minnesota—all being tinged with brown ferruginous and ochry, and consistently disagreeing with the specimens and species described as *P. Kennicotti*.

For the foregoing reasons we believe we are justified in the following deductions: 1st. That the *Tetrao urophasianellus* of Douglas is but a synonym of the true Sharp-tailed Grouse (*Pediocetes phasianellus* of Baird); 2d. That the

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specimens sent by Mr. Kennicott from Fort Rae and Big Island, have hitherto been unnamed, although birds from the same locality were examined by Sir John Richardson, and the plumage described by him, under the belief that they belonged to the true *phasianellus*.

We have named the present species in honor of Robert Kennicott, who in the course of his arduous explorations of the interior of Arctic America, has obtained and forwarded to the Smithsonian Institution three fine specimens.

Notes on Cretaceous Fossils with descriptions of a few additional new species.

BY W. M. GABB.

Since my last paper on Cretaceous Fossils has gone to press, I have had an opportunity of examining the collection of the Burlington County Lyceum of Natural History, at Mt. Holly, N. J. Besides most of the common species, I found several very rare ones, and two or three which were entirely new to me. I shall embrace the present opportunity for mentioning some new facts in regard to certain species and for clearing up some doubtful points in the affinities of others.

It may be worth mentioning, that besides the species described by myself and others, from time to time, in the publications of this Society, over one-third of all the New Jersey Cretaceous fossils in my collection are, as yet, nondescript; and many of the specimens unique. This is true, in a smaller proportion, of the same portion of the Academy's collection. I think I have undoubted proof of the existence of upwards of two hundred unnamed and uncharacterized species of Cretaceous fossils, found in Alabama and New Jersey. The reason of this is, that they are usually found in the shape of casts, and in most cases are not sufficiently characteristic to determine the genera.

TURRITELLA Lam.

T. granulicosta, n. s.—Shell elongated, whorls many, increasing very gradually in size, almost perfectly flat on the sides. Suture impressed, very distinct; bordered below by a slight elevation of the upper edge of the succeeding whorl; lower angle of the whorl, rounded, subangular. Mouth small, subquadrate, anterior angles rounded. Surface marked by about twelve fine, thread-like revolving ribs, three of which are larger than the rest, are placed at equal distances from each other, and from the upper and lower edges and are slightly undulated so as to produce a series of minute nodes. This character shows itself to a much less extent on some of the smaller ribs. Under surface of the body volution marked by a few fine revolving ribs, with regular concavities between them.

Length of last four volutions, .7 in. Width of body whorl, .3 in. Length of aperture, .2 in.

Locality. Burlington Co., N. J.

I have long been acquainted with casts of this species, differing only from those of *T. vertebroides*, Mort. in size. This specimen, belonging to the Mount Holly Society, is the first one I have ever seen that has shown any characters on which to separate it. It has the shell perfectly preserved on a large portion of its surface, and is one of the best characterized species in the formation. There is another species found with it, of which I have only seen casts. They are of about the same size and marked by a few large longitudinal ribs.

NATICA Adanson.

N. acutispira Shum.—Through the kindness of my friend Dr. Moore, State Geologist of Texas, I have had the opportunity of examining a specimen of this species. It is undoubtedly authentic, and may be the type. It is, however, 1861.]

ever, without question, the same as *N. rectilabrum* Con., the types of which are in the Academy's collection. The latter species has long been considered by me, and I believe by Mr. Meek, as being identical with *N. (Lunatia) conceinna* H. & M. The only difference that I could observe between the types of Mr. Conrad's species and Dr. Shumard's was, that the spire of the latter was about .05 in. higher. This, of course, will not entitle it to a distinct specific rank.

VOLUTILITHES Swains.

V. Conradi Gabb.—This species, like many others of the New Jersey fossils, was described originally from casts. It is by no means rare. I have on two occasions seen portions of the shell. One in the collection of the Mount Holly Society is very thick, marked by, (I think about fifteen) moderately sized longitudinal ribs, crossed by numerous fine revolving impressed lines, placed about an eighth of an inch apart. It belongs with *V. bella*, *V. Texana*, and *V. nasuta*, to the genus *Fulguraria*.

CLAVAGELLA Lam.

C. armata Morton is such a rare species, that I had almost believed that Dr. Morton had made some mistake in describing it. The type is lost and I had never seen the species, until I fortunately encountered it at Mt. Holly.

The shell is larger and more robust than represented by Dr. Morton, but there can be no doubt of the identity of the species. It is a true *Clavagella*. One valve is evidently attached to the tube, while the other is free. I now possess one of the only two specimens of which I know.

VENILIA Morton.

V. quadrata, n. s.—Shell subquadrate, gibbous; beaks anterior, nearly terminal, cardinal line almost straight, slightly sloping downwards towards the posterior edge, which is obliquely truncated. Anterior end rounded and merging into the basal edge, which is broadly curved. A prominent subangular ridge passes from the beaks to the posterior basal angle, remaining very distinct to its termination. Posterior muscular scar round, anterior scar subcrescentic. Surface unknown, (a cast.)

Length, 1.5 inch. Width, 1.7 inch. Depth of valve, .75 inch.

A cast from the "Upper member of the Ripley Group," from Mississippi. Coll. Acad. From Dr. Spillmann.

About the size of *V. Conradi*, this species can be distinguished by its regular quadrate outline. This will also separate it from *V. trigona*. It has more nearly the shape of *V. trapezoidea* or *V. rhomboidea*, but is very much larger than either, and is somewhat more rounded in outline.

CRASSATELLA Lam.

C. transversa, n. s.—Shell wide. Beaks (in cast) acuminate, prominent and placed in little less than one-third of the width of the shell, from the anterior end, which is broadly rounded, being slightly more prominent abreast of the muscular scars than elsewhere. Posterior extremity obliquely truncated, subangulated below, and sloping with a curve to near the upper part of the posterior muscular impressions, where it blends with the cardinal margin which is straight, but most depressed behind. Basal edge sinuous, somewhat emarginate just below the posterior muscular scars, as in *C. Monmouthensis* nob. Pallial border marked by a strong rounded ridge. Edge crenulated internally.

Length, 1.3 in. Width, 1.9 in. Diameter, .75 in. (cast.)

This species, described from a cast in the collection of the Burlington County Lyceum of Natural History, is as large as the average specimens of *C. vadosa* Morton, but is much shorter in proportion to the width, being produced posteriorly as much as *C. pteropsis* Con., but in a different manner. This latter

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character will separate it from *C. Monmouthensis*. The upper portion of the posterior end, which, in the latter species, is distinctly angular, is broadly rounded off in the present one. The beaks are also much more distant, narrower and more acute, the two sides sloping up at about the same angle. The muscular scars are of about the same shape, the posterior ones longest, while in *C. Monmouthensis* they are smallest. The anterior end is more prominent than the corresponding portion of *C. Delawareensis* nob., the posterior end more produced, the truncation being of a similar character, but more oblique, and the basal emargination very distinct, while in the latter form it is often entirely absent. This species seems to be very rare, since this specimen is the only one I have ever seen.

AXINÆA Poli.

A. subaustralis Gabb. (*Pectunculus Australis* Morton).—Dr. Morton says in his synopsis, "I possess casts of another species from the marls of New Jersey."

These casts I have always considered as belonging to the above species, but had no proof except that they corresponded in size and form to his type. I have now before me undoubted proof of the correctness of my opinion in the shape of three specimens, two of single valves, the other with both valves in contact. I am indebted to the kindness of Dr. G. Brown, the courteous curator of the collection of the Mt. Holly Society, for these specimens.

PECTEN Gault., Linn.

P. Texanus Gabb, (*Virgatus* Roem. not Nills.) This form is undoubtedly distinct from the *P. virgatus* of Nillson and Goldfuss. It is a broader and shorter shell, and with the ribs, over the surface, more than twice as numerous. I have frequently observed casts in the New Jersey marls, and there is a piece of shell from Alabama in the collection of the Academy which I cannot separate from this species, as described and figured by Dr. Roemer. It may be that they differ by the sides, from the beaks to the widest portion of the shell, being longer and straighter. They show the same equivalve, compressed form, and are twice as large as Dr. Roemer's figure. The ears I have never seen.

P. Nillssonii Roem. does not correspond, certainly, with Dr. Goldfuss' species; the markings are the same, but the form is somewhat different and the ears are very distinct. The right ear of the right valve is very slightly emarginate, (see figure.) He says, "Das rechte Ohr der rechten Klappe für den *Byssus* deutlich ausgeschnitten," while in Goldfuss' figure pl. 99, fig. 8, *b*, it is very deeply emarginate, the extremity being widened and the hinge line concave.

It may be *P. Burlingtonensis* nob., Jour. Acad. 2 Ser. Vol. 4, pl. 48, fig. 25, in which the artist has represented a few slight undulations in such a way as to convey an erroneous impression that they are almost concentric ribs. The surface is plain or very obscurely undulated, and it is marked by fine concentric, very slightly prominent imbrications.

NEITHEA Drouet.

Pecten, Janira, pars Auct.

N. Mortoni, nob., *Janira* id. d'Orb., *Pecten quinquecostata* Mort. not Sow. Dr. Morton says, "This fossil is beyond a doubt specifically identical with the one described by Sowerby, and so characteristic of the cretaceous strata of Europe;" but as d'Orbigny justly observes, all the species of this group have been confounded under one specific name.

With the latter author, I believe it to be undoubtedly different from that species. It is a very common fossil in some of the beds of the Jersey, and I have observed it from Alabama and Tennessee. I have a very fine specimen 1861.]

from the last mentioned State, kindly sent to me by Prof. Safford, the State Geologist. The specific characters are as follows:

Shell equilateral, or nearly so, very inequivalve. Lower valve deep, convex, sometimes a little the longest at the lower left hand corner, when the valve is laid on its face. Surface marked by six large radiating ribs, placed at about equal distances, and with usually four, sometimes but three intermediate ribs. When there are four, two or three of them are of about the same size, the other one or two being much smaller and placed on the side of the adjoining principal rib. Between the most external principal rib, on each side and the ear, there are from four to six fine linear ribs. The whole surface is crossed by minute imbricating lines of growth. Upper valve flat or concave, and marked by about from twenty-six to thirty nearly uniform, radiating ribs, with wider concave interspaces. The tops of the ribs are subtriangular or regularly rounded. There is, very rarely, the slightest approach to the sexradiate arrangement of the other valve. I have not seen the ears, but Dr. Morton figures them as being small and equal. He has them of nearly the right size, but I think the left hand one, from the remains on my specimen, should be larger.

Dr. Morton's figure is in the main correct. The basal margin should, however, be more excavated between the large ribs, and the intermediate ribs are too numerous. The inequality of the two sides is well represented.

This species can be distinguished from both *N. quadricostata* and *N. quinque-costata* by the upper valve. Instead of having six large ribs with three or four smaller alternate ones, all of the ribs are of a nearly uniform size. The valves are less undulate on their margins than either of the above species.

Roemer calls this species a variety of "*Pecten quadricostata*."

CTENOIDES Klein.

C. squarrosa n. s.—Shell oblique, gibbous. Surface marked by about ten or twelve larger uniform square ribs placed at about equal distances, nearly flat on top, and with semicircular concavities between them, a little wider than the ribs. The top of each rib is marked by two grooves, so as to make it tri-costate. At the base of each interspace is a fine linear rib. The whole surface is crossed by distinct lines of growth, somewhat imbricated. Ears unknown. Height .6 in., greatest width .5 in., height of valve .18 in.

The form of this species is about exactly like that of *C. pelagicum*, but it can be distinguished by the much smaller number and relatively larger size of the ribs.

Locality and position. White cretaceous limestone of Alabama.

One specimen. Coll. Academy.

TEREDO.

T. tibialis Morton. Syn. p. 68, pl. 9, fig. 2. Dr. Morton includes two very different fossils under this name. We will have to retain his name for the species figured. The one to which he refers as occurring in the "friable marls" is *T. irregularis* nob. *T. tibialis*, however, is not a *Teredo*, but is probably allied to *Vermetus*. It has never been found boring, but grows in aggregated masses of cylindrical tubes, almost always parallel and straight, sometimes five inches long, slightly variable in diameter from irregular constrictions, *contains no shell*, but the tube is divided at certain distances by transverse septæ, convex and thin, the convexity pointing towards the widest (or newest) portion of the tube, as if the animal progressed along the tubes, closing the space behind it, as in the manner of the *Cephalopoda*, but hermetically. I can find no genus described, in which I can place this species, from the fact that the shell is straight from the beginning. I therefore propose the generic name *POLOPOTHUS*, and characterize it as follows:

Shell tubular, straight or nearly so, growing in aggregated masses arising

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from a common base. Interior of the tube closed at certain points by a transverse septum. Animal unknown.

I place this genus near *Vermetus*, from the statement made by Pictet, that "Les tubes des serpules sont complètement libres, tandis que les coquilles des vermetes sont coupées par de petites cloisons intérieures transverses, que forme l'animal à mesure qu'il s'accroît."

H. and A. Adams, in their "Genera of Recent Mollusca, however, do not mention these partitions.

P. Americana Gastrochæna id., nob. Jour. Acad. 2 ser., vol. 4, p. 393, pl. 68, fig. 20.

Since describing this species, I have obtained specimens, retaining large portions of the shell, and which prove that this is a second species of the same genus. The figure quoted above, taken from a cast, illustrates the form. The shell is thin and smooth. The septæ are as thick as the outer wall, placed at distances varying from half an inch to two inches or more. The convexity, as in the above form points towards the larger end. This species is much larger than the preceding. I have seen one tube having a diameter of .7 inch at its broadest extremity.

Not rare in the Ripley Group of Alabama and Mississippi, and found, as casts, in the yellow limestone of Timber Creek, N. J.

Descriptions of New Species of American Tertiary Fossils and a New Carboniferous Cephalopod from Texas.

BY W. M. GABB.

PHOS Montf.

P. bellaliratus.—Shell robust; spire elevated, whorls eight. First three smooth and polished, subsequent ones marked by numerous longitudinal angulated ribs, of which there are about twenty on the body volution. Between them, the interspaces are regularly concave. These are crossed by revolving lines, about fifteen to eighteen on the body whorl, nine or ten of which are visible on the preceding ones. Suture small but distinct, and bordered by a prominent, undulated rib; the whole surface of the shell being crossed by well marked lines of growth. Mouth short, rather wide. Outer lip acute on the edge, thickened behind and internally striate. Inner lip covered with a thick coat of enamel, smooth and polished. Canal short, deeply notched and with a large fold on the truncated edge of the columella.

Length, .6 in.; width of body whorl, .3 in.; length of mouth, .24 in.

From the Eocene of Claiborne, Ala. Coll. Acad.

From *P. Texanus*, nob., the nearest allied form, this species can be distinguished by the more robust shape, lower spire, absence of the occasional tendency to form pseudo-varices, or periodical arrests in growth; the broader mouth and the perfectly smooth columellar lip, which, in the latter species, is marked by a few irregular polished thickenings or teeth. The notch, at the end of the canal is deeper and more oblique, the longitudinal ribs are more prominent, acute, fewer in number and placed further apart. *P. Texanus* has distinct revolving ribs; in the present species these are mere imbrications, abrupt above and sloping anteriorly to the edge of the succeeding ones, except near the canal, where the last two or three take the form of ribs.

VOLUTA Lam.

V. sinuosa.—A fragment, in the collection of the Academy, from the Miocene, either from Virginia or North Carolina, displays such strong specific characters, that, notwithstanding its mutilated condition, I shall venture to 1861.]

name it. The fragment consists of the principal part of the body whorl, including the anterior two-thirds of the mouth and, on the opposite side, the surface, almost to the suture. It resembles somewhat *V. mutabilis* Con., but the body whorl is more convex in the middle, although the shell was more slender in its outline. Shell thick, mouth narrow, curved and more regular in its width than *V. mutabilis*. Columellar lip with three very prominent rounded folds, the anterior one most oblique and ending gradually at its outer extremity. The upper two end abruptly, the upper one most decidedly so. These folds are as high as the thickness of the shell, while in *mutabilis* they are always faint, sometimes almost obsolete. Columella very tortuous, reflected somewhat upwards at its extremity, when the shell is in its natural position. Surface smooth.

Length of body whorl about 2.5 inches; width about 1.25 inches.

TURBONILLA.

T. aspera.—Shell elongated, acute; spire very high, whorls ten or eleven; suture distinct. Mouth ovoid, slightly expanded at the inner anterior margin, angulated behind; columella nearly straight. Surface of the whorls most prominent a little below the middle, and marked by about ten very prominent longitudinal ribs not continuous from one whorl to another. These ribs are crossed by three revolving lines, which take the form of acute ribs between the longitudinal ones, but develop into large nodes on their crest; under surface of the body whorl marked by four additional plain revolving ribs, becoming smaller in advance.

Length .28 in.; width of body whorl .08 in.; length of mouth .06 in.

From the Miocene of Santa Barbara, Cal.

MODELIA Gray.

M. striata.—Shell turbate; whorls five, rounded above. Suture simple, well marked. Mouth about half the length of the shell, angulated above, broadly rounded below, and somewhat expanded anteriorly. Outer lip simple; inner lip simple above, marked by a thickened line inside the margin, in advance of the umbilicus and extending to the middle of the anterior margin. Umbilicus small, deeply perforated and bordered by a sharp line. Surface marked by minute revolving striae, very numerous, most distinct on the under surface of the body whorl; and a few larger lines of growth. Outline of the whorls regularly but slightly convex above, concavely truncated below, and with the lower angle marked by a sharp angular revolving ridge immediately below the line where the succeeding whorl comes in contact with the surface, so that it is only visible on the body whorl.

Length .2 in.; width of body whorl .14 in.; length of mouth .1 in.

From Santa Barbara, Cal. Miocene?

The carina on the lower angle of the whorl appears, on a cursory examination, to be the broken remains of the mouth, on account of its proximity to the posterior end of the outer lip; but is, in reality, a normal character, is a very little below the edge of the lip, and is found at all ages of the shell, becoming in adult shells somewhat less marked as it approaches the extremity, on the body whorl. In advance of it, the lip is very faintly emarginate.

ROCELLARIA Fleuriau de Bellevue.

R. antiqua.—Shell cuneiform, very widely gaping in front. Beaks small involuted; anterior but not terminal. Cardinal margin straight for about half the width of the shell, joining the posterior margin, which continues a short distance, nearly parallel with the basal edge. The posterior extremity is broadly and regularly rounded. Basal margin nearly straight, the hiatus between the valves continuing from the extreme anterior end almost to the pos-

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terior end, being broadly rounded in advance and gradually tapering behind. Surface marked by irregular lines of growth, placed very closely, sometimes most distinct on the basal half of the shell.

Length from the anterior to posterior end, .3 in.; greatest width, at right angles to first measurement, .18 in.; depth of one valve, .09 in. These measurements are from a small single valve. I have before me another specimen imbedded in a piece of shell of one of the large *Mercenarias* of the Miocene, probably of James River, Va., which is more than twice as large. From marks on this fragment, it appears to be gregarious. Compared with *R. dubia* (recent) as figured by H. and A. Adams, this shell is broader posteriorly, more curved on the cardinal side, and the open space between the two valves, in front, commences more abruptly and is continued further posteriorly. The beaks are more nearly terminal, the anterior portion of the shell being less produced.

SPHENIA Turton.

S. bilirata.—Shell elongated subquadrate, convex. Beaks nearly terminal, small, incurved. Umbones small, depressed or undulated by a faint median depression which usually extends about half the length of the shell, becoming obsolete. Anterior extremity most prominent near the basal margin. Posterior end abruptly truncated. Cardinal and basal margins nearly parallel, narrowest posteriorly. The basal margin is straight or very slightly emarginate. From the beak extend two distinct ridges, both very much imbricated in the young shell, less so in the more advanced state. The most anterior of these runs directly to the posterior basal angles, the other is intermediate between it and the cardinal edge, both ending rather abruptly when the shell is about half of its full size. Surface closely and irregularly marked by heavy folds.

Length, .2 in.; width, .35 in.; greatest diameter (variable) .15 in.
Santa Barbara, Cal.

TELLINA Linn.

T. euryterma.—Shell wide, nearly equilateral. Beaks small, acute. Extremities broadly and nearly evenly rounded. Hinge line slightly excavated in advance of the beaks, straight and sloping behind. Surface smooth or marked by faint lines of growth. Hinge small.

Length, .5 in.; width, .95 in.; height of single valve, .1 in.

Allied to *T. sericea* Con., but can be distinguished by the anterior end, which in that species is narrow and even subacute, being in this as broad as the posterior end. The beaks are more nearly central than in that species. Having nearly the same general form as *Psammobia linteae* Con., the beaks are more elevated, the ends more even and the surface smooth, while it is marked by elevated lines in the latter species.

From the Eocene of Vicksburg, Miss.

VENUS Linn.

V. rhysomia.—Shell small, rounded—subtriangular. Beaks small, incurved, and placed about a third of the width, from the anterior end. Posterior cardinal margin nearly straight; posterior extremity narrow, rounded. Surface highly polished, marked by obsolete lines of growth, and radiating lines so indistinct as only to be visible through a lens by the aid of reflected light. Hinge short, teeth compressed. Pallial sinus deep and broadly rounded at its base. Internal margin smooth.

Length, .2 in.; width, .25 in.; depth of valve, .06 in.

From Santa Barbara, Cal. Miocene (?)

I have seen three valves of this species, the measurements above being from the largest. I never saw fossils presenting more the appearance of recent shells than these specimens. Except for a slight change in color, they could not be 1861.]

distinguished from specimens taken fresh from the water. They appear to have lost little, if any, of the animal matter, and preserve a perfect polish.

The present species may be compared in form with *Meretrix* (*Cytherea*) *Marylandica* Con., Miocene Foss. pl. 9, fig. 1. It differs in being more regularly rounded anteriorly, beaks smaller in proportion, (the umbones being almost acute,) and in being proportionately wider.

MERETRIX.

? *M. Yoakumii*.—Shell subquadrate; beaks prominent, placed one-third of the distance from the anterior extremity, which is regularly rounded. Posterior cardinal margin straight. Anal extremity subtruncated. Surface marked by numerous very regular concentric ribs, which are abrupt on the side towards the beak, and slope concavely on the other side. Crests of the ribs rounded or subangular. Interspaces a little wider than the ribs.

Length, .3 in.; width, .4 in.; height of valve, .09 in.

From a brown, highly ferruginous sandstone, (Eocene), Caddo Peak, Texas. Collected by Prof. Yoakum.

The specimen being so imbedded that I could not obtain a view of the hinge, renders the determination of the genus somewhat doubtful; but since it presents the usual appearance of this genus more strongly than of any other, I refer the species provisionally as above. The shallow valve, the abrupt posterior end, and the very distinct ribs (about thirty in number on the specimen before me), will serve to separate the species from all the other known species.

PROTocardia Beyrich.

There is a group, in the genus *Cardium*, which can always be distinguished by the peculiar surface markings. This group was separated, in 1845, by Beyrich, under the above name, taking *Cardium Hillanum* Sow., as the type of the new genus. I see no reason why it should not be considered a valid genus, since it can always be distinguished by very obvious characters, and appears to be fully as well founded as many ordinarily received genera. It ranges from the Lias to the Eocene. I am not aware of any species described outside of these limits. The markings are as follows, the anterior two-thirds to four-fifths of the surface is plain or concentrically striate, while the remainder is radiately ribbed. The following species belong to this genus:

LIAS.—*C. truncatum* Phil.

OOLITE.—*C. semipunctatum* Munst.; *C. semiglabrum* M.; *C. intextum* Munst.

CRETACEOUS.—*C. Hillanum* Sow.; ? *C. pustulosum* Munst.; *C. abruptum* Gabb; *C. multistriatum* Shum.; *C. Brazonsis* Shum.; *C. Spillmanni* Con.; *C. Coloradoense* Shum.; *C. peregrinorum* d'Orb.; *C. subhillanum* Leym.; *C. impressum* Desh.; *C. Guerangeri* d'Orb.

Eocene.—*C. Nicolletii* Con.; *C. diversum* Con.

? *P. diversa* Con. sp.—A small specimen from Houston Co., Texas, from an Eocene deposit presenting most of the characters of this species, but differs in some few points. It has the form of the typical specimens of *P. diversa* except that the buccal extremity is more regular, the basal margin is entire, and not sinuous as in adult specimens of that species; this may be however merely the effect of the difference in age. The anterior portion is marked by obsolete cancellations, and the posterior radiations are somewhat different. The ribs are broad and rounded, with small bars placed at short intervals connecting them, while in the young state of *P. diversa* the ribs are linear with wide spaces and without connecting bars. In that species, also, the radiated portion of the surface blends into the adjoining surface by the ribs becoming obsolete, while in this specimen the same portion ends abruptly, the ribs all being of the same size. It will be necessary to examine more specimens to decide whether this is

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the young of a variety of the above species, or distinct. Should it prove so, I suggest the name *P. gambrina*.

CARDITA Brug.

C. monilicosta.—Shell nearly circular; beaks small, submedian, cardinal border straight or faintly arcuate. Surface marked by from fourteen to seventeen large rounded ribs, strongly moniliform; interspaces narrow, acute. Posterior muscular impressions largest. Pallial line broad and distinct but not impressed. Internal margin coarsely crenulate, one large square tooth, corresponding with each interspace between the ribs; extreme edge undulated. Hinge robust.

Length, .19 in.; width, .2 in.; depth of single valve, .05 in.

From the Tertiary (probably Miocene) of Santa Barbara, Cal.

This beautiful little shell is somewhat variable in the size and prominence of the nodulations of the ribs, the number of the ribs themselves, and the depth of the valves. One specimen before me, with about the depth given above, is larger and wider, so that the proportions are a little different. It can, however, be readily distinguished by its small size, subcircular form, and the approximate number and beading of the ribs.

PERNA Adanson.

Modiola Lam.

P. Texana.—Elongated subtriangular. Beaks terminal, small; umbones prominent, though small; anterior end rounded, narrow; cardinal margin straight, basal broadly sinuous; posterior basal angle abruptly rounded; posterior edge broadly convex, uniting, with a regular curve, with the cardinal line. Umbonal ridge high, convex; anterior slope abrupt and slightly convex near the margin towards the beak, between which convexity and the ridge is a slight concavity; posterior slope regular. Surface covered by numerous, radiating, dichotomous ridges, flattened above, separated by deep depressions and crossed by fine lines of growth. These ribs almost disappear on the anterior umbonal slope for about the marginal half of its width.

Length from beak to posterior angle, 2 inches. Width, at a right angle to the first measurement, .9 in. Depth of valve, .4 in.

From a coarse brown, highly fossiliferous Eocene sandstone from Caddo Peak, Texas. My collection, from Dr. Moore, State Geologist of Texas.

Differs from *P. Mississippiensis* (*Modiola id.* Con.) in having the cardinal line longer and the shell less oblique. The ribs, which in the latter species entirely disappear in advance of the umbonal ridge, become much smaller in the same part of the present species, but are persistent throughout. All of the ribs are larger and wider apart than in Conrad's species.

MORRISIA Davidson.

M. Hornii.—Shell small, lenticular, flattened. Surface minutely granular, and sometimes with a few indistinct lines of growth, often entirely absent. Outline varying from almost perfectly circular in young shells to indistinctly rounded subquadrate, (exclusive of the beak,) the greatest width being towards the basal margin, which is compressed. Lower valve, beak acute, area narrow and not so long as the width of the shell. Upper valve sometimes marked by a faint, linear, longitudinal depression, running from the foramen, about half the length of the shell. Foramen large, encroaching on both valves, in the usual manner in this genus, but most strongly on the upper valve; pentagonal in shape, the upper angle (in the lower valve) acute, lower portion more elongated and with the two lower angles often rounded.

Length, .11 in.; greatest width, .11 in.; diameter, .015 inch.

From the Miocene (?) of Santa Barbara, Cal.

1861.]

This beautiful little species, which was first pointed out to me by my friend, Dr. Horn, occurs in a rich fossiliferous marl, associated with numerous species of Polyzoa, and some larger mollusca, and is not uncommon. The measurements given above are from the largest specimen. It appears to be full grown. It differs from *M. anomioides* Scacchi, as figured by H. and A. Adams, in being more rounded in outline, never nearly so quadrate, and in wanting entirely the basal emargination, although, in some specimens the lower margin is faintly undulated, showing a tendency to form a median sinus.

CARBONIFEROUS.

GONIATITES.

G. entogonus.—Robust, discoidal; whorls six or seven, gradually increasing in size, each one embracing about two-thirds of the preceding volution. Umbilicus broad, making about a third of the diameter of the shell. Body whorl broadly rounded on the dorsum, widest at the umbilical margin, which is bordered by a sharp angular ridge, inside of which the surface slopes to the preceding whorl with a very slight convexity. The cast is marked by about five depressions on each whorl, the remains of periodical, thickened lips, which are nearly straight in the younger state, but are slightly sinuous in the larger specimens. Septæ placed closely, so that the extremities of the saddles are within the line of the ends of the lobes of the preceding septum. There are two lobes and two saddles on each side besides the dorsal lobe. Dorsal lobe long, sides nearly parallel, extremity doubtful (probably bifid); dorsal saddle wider than the lobes; sublinguæform and acuminate in the middle; superior lateral lobe of about the same size as the dorsal saddle, but somewhat wider at its commencement and rounded at the extremity; lateral saddle differs only from the dorsal in being wider; latero-ventral lobe very oblique, with its internal edge extending to the carinated margin of the umbilicus.

Diameter, 2.25 inches; height of mouth, .5; width of mouth, 1.2 in.; height of body whorl, .9 in.

From the carboniferous limestone of Lampases Co., Texas, immediately underlying cretaceous rocks. State collection, Austin, Texas.

This species is most nearly related to *G. Owenii* Hall, and *G. Hyas* ej. It differs from the former in having a broader umbilicus than is shown in the figure of that species (13th Report, Regents N. Y. Univers., p. 100,) and in the additional lobe to the septum. The whorls are broader and more embracing than those of *G. Hyas*; the septum has the same number of lobes, but they are of a different shape, the extremities being rounded, while the extremities of the saddles are pointed, being just the reverse of the arrangement in that species. The latero-ventral lobe of the present species is very oblique, especially on the ventral side, and the corresponding saddle is almost absent, while in *G. Hyas* this lobe differs only from the lateral one in size and the ventral saddle is distinctly marked. The carinated edge to the umbilical margin of the body whorl will also serve as a strong distinguishing character.

Associated with this species is the mutilated cast of a large species of *Bellerophon*, which I cannot identify with any known species. I am indebted to my friend, Dr. Moore, State Geologist of Texas, for the privilege of studying this and many other interesting fossils collected in that State.

Notes on certain Decapod Crustacea.

BY WM. STIMPSON.

PACHYGRAPSUS MARMORATUS.

Cancer marmoratus Fabr.; Herbst.

Grapsus varius Latr.; M. Edw.

Leptograpsus marmoratus M. Edw. Melanges Carcinologiques, p. 137.

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It is evidently congeneric with *P. crassipes*, the type of *Pachygrapsus*. We have specimens from Constantinople in the Smithsonian Museum.

CYRTOGRAPSUS ANGULATUS.

Cyrtograpsus angulatus Dana, U. S. Exploring Expedition, Crust. i. 352, pl. xii. f. 6.

In our specimens the ambulatory feet are ciliated toward their extremities. "Rio de la Plata," Capt. Page's Expedition.

METASESARMA TRAPEZIUM.

Sesarma trapezium Dana, loc. cit., i. 354, pl. xxii. f. 8.

An examination of Prof. Dana's original specimens shows that this species belongs to M. Edwards' genus *Metasesarma*.

GEOHELPHUSA BERARDI.

Thelphusa berardi Savigny, "Egypte" Crust. pl. ii. f. 6. M. Edw., Hist. Nat. des Crust. ii. 14; Mel. Carcin. p. 178.

We have specimens from Egypt, brought home by Mr. Marsh.

POTAMOCARCINUS DENTICULATUS, n. sp.

The following description will serve to distinguish it from *P. armatus*, the only species hitherto known.

Carapax flattened, obsoletely granulated. Antero-lateral margin denticulated; little teeth about eighteen in number on each side. Meros or fourth joint of the external maxillipeds broad, almost quadrate. Length of carapax in a male, 0.84; breadth 1.22 inch.

In the river Atrato, New Grenada. Atrato Exploring Expedition.

DILOCARCINUS PICTA.

Dilocarcinus pictus M. Edw., Arch. du Mus. vii. 181, pl. iv. f. 2.

Paraguay, Capt. Page's Expedition.

Dr. Randall's genus *Orthostomas* was founded on a species of M. Edwards' subsequently constituted *Dilocarcinu*. This name has, however, been used twice previously in Articulata.

DILOCARCINUS PAGEI, n. sp.

A species closely allied to *Dilocarcinus spinifer* M. Edw. It differs, however, in the following particulars: The surface of the carapax is more even, the limits of the regions being scarcely traceable. The seven teeth of the antero-lateral margin are arranged as in *Dilocarcinus castelnaui* M. Edw., the second tooth not being distant from the angle of the orbit. The inferior margin of the orbit is armed with six very sharp, slender spines. The inferior margin of the meros-joint in the chelipeds is four-spined; while the joint preceding it is one-spined. From *D. castelnaui*, which it resembles in the shape of the carapax, etc., it differs in having five sharp spines at the antero-lateral angle of the buccal area.

Paraguay, Capt. Page.

A Monograph of the Genus *ÆGIOTHUS*, with descriptions of new species.

BY ELLIOTT COUES.

Since the publication, in 1858, of the Ninth Volume of the Reports on the Pacific Rail Road Surveys—the General Report on the Birds—the amount of material has steadily and rapidly increased, until there is, at the present day, more than double the number of specimens in the museum of the Smithsonian. 1861.]

This great accession of new material in all departments of Ornithology, has of course, proportionally increased our knowledge of the birds of North America, both as regards the number of species inhabiting the continent, and their geographical distribution; and has furnished the means of making many additions, and some corrections, to the General Report. But, perhaps, to no single group of birds have there been so many added, as to that one to which it is proposed to devote a few pages.

At the time of the writing of the article on *Ægiothus*, in the General Report, there were but eight specimens of the genus in the collection, and those representing but a single species. The series of *Ægiothi*, from an examination of which the present paper was prepared, consists of more than one hundred specimens, from very various localities in America, Europe and Greenland, and comprises all the known species, except *A. rufescens* and *Holbølli*, and is, moreover, particularly rich in the species described here for the first time. The very large series of *Ægiothus exilipes* were mostly procured by Messrs. Robert Kennicott and Bernard R. Ross, though some were received from Donald Gunn, Esq. The series of *A. fuscescens* were mostly obtained by ourselves in Labrador. The specimens upon which the *A. rostratus* is founded were kindly furnished for examination by the Copenhagen Museum, which also supplied the examples of *A. canescens*, and of the European type of *A. linarius*.

The above remarks seem necessary to prevent the doubt that might otherwise very naturally arise, that at this late date there could remain undescribed three species of so well known a genus as the present. We may be allowed to add, that we have formed our opinions only after long study and deliberation, as well as consultation with several very eminent ornithologists.

Though the four described species of *Ægiothus* are well known, the synonymy of some of them is in a state of considerable confusion. For this reason, and for the sake of showing more clearly the relationships of the new species, it has been deemed advisable to present a complete monograph of the genus.

ÆGIOTHUS Cabanis.

Fringilla sp. Linnæus, 1766, et auct. antiq.

Passer sp. Pallas, 1811, nec auct.

Spinus p. Koch, nec Boie, 1826.

Linota p. Bonaparte, 1838.

Linaria, Cuvier, 1817, nec Bechst., 1802, cujus typus *Fring. cannabina* Linn.; nec *Linaria* Tourn. quæ plant. gen.

Acanthis, Bonaparte, 1850; nec Bechst. 1802, cujus typus *Fring. carduelis* Linn.; nec Meyer, 1822, (typus idem): nec Keys et Blas. 1840, cujus typus *Fring. spinus* Linn.

Ægiothus, Cabanis, Mus. Hein. 1851, 161. Typus *Fring. linarius* Linn., Baird. Gen. Rep. 1858, 428.

Linacanthis, Des Murs. 1853, fide G. R. Gray.

Char. gen.—Rostrum parvum, breve, rectum, plus minus compressum et acutum, basi plumulis rigidis, recumbentibus, nares rotundas occultantibus tectum. Alæ longissimæ, remigibus primis tribus fere inter se æqualibus. Cauda elongata, valde forficata, rectricibus latis, rotundatis. Pedes breves, debiles, digito medio sine ungue tarso multo brevior, digitis lateralibus fere inter se æqualibus, halluce ungue brevior. Ungues elongati, compressi, incurvati, acutissimi.

Mas et fem. omni temp. pileo rubro induti; mas nupt. temp. pectore uropygioque roseo vel carmesino tinctis.

The genus which occupies our attention at present is one of the most distinct and easily recognizable of the *Fringillidæ*. Its essential characters lie in the small, more or less compressed and acute bill, covered at the base with recurved plumuli, so long and dense as to completely hide the nostrils; in the long wings; in the rather long deeply forked tail; and in the weak feet with their very short toes. The pattern of coloration also seems, in this instance, to be a generic character, being precisely the same in all the known species of

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the genus, and not existing in any other, though there is seen an approach to it in *Cannabina*.

In the type of the genus the bill is exceedingly acute and much compressed, the lateral outlines even concave. From this character of bill, there is seen through *A. Holbölli* and *fuscescens*, a gradual transition to the *A. rostratus*, where the bill is much larger, less compressed and acute, and more full and turgid. The plumuli are also considerably shorter and more scant; and the whole appearance of the bill much that of a *Cannabina* or even of a *Carpodacus*. The wings are very constant throughout the genus, differing scarcely appreciably in length or pointedness in the different species, though the proportions of the primaries vary considerably in the same species. Exactly the reverse, however, is the case with regard to the feet; i. e. the characters differ considerably in the different species, but always are quite constant in each. Thus in *linarius*, *rufescens*, *Holbölli*, *fuscescens* and *rostratus* the proportions of tarsus and toes are much the same, the difference in absolute length being only proportional to the size of the birds. In *exilipes* the feet are smaller and weaker, and the toes shorter, the difference being specially noticeable in the middle toe, which, with the claw, is shorter than the tarsus. In *canescens*, on the other hand, the feet are larger and stronger, even more so than is proportional to the greater size of the bird; but the toes are excessively short, so much so that even the unusually long claw does not make the middle toe equal to the tarsus. The tail differs but slightly, if at all, in the different species; for though *A. canescens* is spoken of by authors as having a comparatively longer tail than has *linarius*, the difference seems hardly more than is proportional to the greater size of the bird.

With respect to color, the species present a remarkable similarity, not only in the pattern of coloration, but also in the tints. In all, there is found the crimson pileum, which varies in size, and in the intensity of the color, with sex and age. It has sometimes a peculiar coppery or brazen reflection, very different from the usual deep crimson tint. The breast, with the sides of the head and body to some distance, as well as the rump, are tinged with rosy or carmine. In the examination of a great number of specimens I have noticed a fact that I have seen nowhere stated. It is that the depth and intensity of the color on the breast and rump is in direct proportion to the lightness or darkness of the general colors of the bird. Thus, in *rostratus* and *fuscescens*, the rosy on the breast becomes so bright as nearly to equal in intensity the crimson of the crown. *Canescens* and *exilipes* present the other extreme, the rosy of the breast being very light, scarcely more intense than that on the rump. *Linarius*, and *rufescens* and *Holbölli* are intermediate between the two extremes in this respect. The females of every age, and the very young males, either want entirely this rosy on the breast and rump, or else show but very slight traces of it. All the species are streaked above; the feathers having very dark centres and light borders; but in *fuscescens* and *rostratus* these borders are so narrow that the parts appear almost uniformly dusky. In *canescens* and *exilipes* these streaks disappear on the rump, leaving that part pure white; in the other species of the genus the rump is thickly streaked. In all, the sides of the body are more or less streaked with dusky; and here the same rule holds good as with regard to the rosy of the breast. In the darkest colored species—*A. fuscescens* and *rostratus*—the streaks are most numerous, darkest, and most distinctly defined: they become less numerous and distinct in *linarius* and *exilipes*, and are sometimes almost wanting in *canescens*. In the females these streaks extend quite across the breast.

It will thus be seen that the species of the genus are all very closely related; the characters, when taken from the colors, being chiefly those of intensity, and when based upon form, being found in the varying combination of several features. *A. rostratus*, indeed, differs from the others in the possession of a much larger and more turgid bill; but as the other characters agree strictly with the type, and especially as the transition from one extreme to the other, 1861.]

through *fuscescens* and *Holböllii*, is gradual, we see not the slightest cause for separating it, even sub-generically. Moreover, if distinctions were founded upon size of bill, there is no reason why a similar discrepancy in the size and proportions of the feet should not be made the grounds of division, and thus it would be necessary to separate the *A. canescens* and *exilipes*;—a procedure hardly warrantable. We think it probable that the genus, as far as can be judged from the species now known to compose it, is incapable of a natural division.

Throughout this genus the most tangible evidence of immaturity, next to the absence of the rosy tints on the breast and rump, lies in the presence of a general yellowish or rufous suffusion, particularly about the head and fore-parts of the body. This is accompanied by a general indistinctness of outline of the streaks, the dusky being bordered with reddish, which fades insensibly into the white ground color. Indeed, we are of opinion that this rule is capable of much more extensive application, embracing perhaps the greater part of the genera of the *Fringillidæ* the species of which are streaked. It is very evident in young specimens of *Passerculus savanna*, *Poecetes gramineus*, *Melospiza melodia*, and other allied species, and in some species of *Plectrophanes*, the females of which resemble the streaked sparrows very closely. Moreover, in some species, as for example, the *Spizella socialis* and *Coturniculus passerinus*, the presence of streaks below is an evidence of immaturity, these streaks entirely disappearing when the bird is fully adult.

The "theory of variation," then, in this genus, so far as regards the plumage, would seem to be essentially the same as that which is most usual throughout the family, though agreeing most closely with that exhibited by the *Spizellinæ* (of Baird, as defined by that author). The sexual variations, however, in the absence in the female, of the red which is the most conspicuous color of the male, is precisely the same as is seen in allied *coccothraustine* types, such as *Pinicola*, *Carpodacus*, *Curvirostra*, etc.

Geographical Distribution.—The genus is entirely confined to the Northern hemisphere, being unknown in Africa or South America. It is, moreover, emphatically a boreal genus, all the species inhabiting high latitudes, and only coming south during the winter. The species, as far as now known, are very equally distributed. One is common to Europe and America; two are peculiar to America; two to Europe; and two inhabit the neutral ground of Greenland. Both the latter, however, are probably found at times in Europe, and may also very possibly be detected on our own continent.

Comparison with allied Genera.—The genus is most closely allied to *Cannabina*, a European form, with *Fringilla cannabina* Linn., as type, both having much the same general form and appearance. The differences, however, are readily appreciable, and quite sufficient to separate the two. In *Linota* the bill is much larger, stouter and more turgid, and less compressed and acute, and the nasal plumuli are very much shorter. The feet are larger and stronger, the toes especially much longer, the middle one, without the claw, being nearly as long as the tarsus. The hind toe is as long as its claw. The tail is shorter, less forked, its feathers much narrower and more acute. The wings are much the same. The general pattern of coloration is the same; but the colors of the back are in well defined areas; the throat is streaked; the tail and wings with very broad well defined white edges, etc. Apparently the most essential distinctive characters are those lying in the feet. *Leucosticte* is the most closely allied North American genus, agreeing with *Ægiothus* in many respects. It differs, however, in a stouter, more turgid, less compressed and acute bill, with its decidedly convex culmen; in the presence of ridges on the lower mandible. The tail is much less forked, and the feathers are even broader, with more obtuse tips. The feet are much the same; but the lateral toes, in comparison with the middle, are shorter. The claws are shorter. *Chrysomitris*, with *Fringilla spinus* L., as type, has even a more compressed, attenuated and acute bill, but the culmen is much curved; the nasal plumuli are exceedingly short; the

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tail is very much shorter, with narrower and more acute feathers; and the toes, especially the hinder one, are longer. The differences from the other more or less closely allied genera,—*Carpodacus*, *Curvirostra*, *Carduelis*, etc.,—are too great to require special comparison.

The following brief schedule will serve to determine the species:—

Synopsis of Species.

A. Middle toe and claw equal to the tarsus. Rump streaked with dusky at all ages and seasons.

I. Bill dusky; dusky predominating above; sides very distinctly streaked; wings and tail very narrowly edged with whitish; breast in adult deep carmine.

1. Bill enormously large, arched, the culmen convex. Length 6.00; wing, 3.25; tail, 2.70; bill, 0.41; tarsus, 0.68; middle toe alone, 0.41 *rostratus*.

2. Similar; smaller; bill less arched; culmen straight. Length, 5.25; wing, 2.90; tail, 2.35; bill, 0.35; tarsus, 0.58; middle toe, 0.36 *fuscescens*.

II. Bill mostly yellow. Yellowish predominating above; sides confluent streaked; wings and tail broadly margined with whitish; breast in adult bright rosy.

3. Bill bright yellow, elongated, robust; plumuli short; lores and a large gular spot black. Length, 5½ inches (Bp.) *Holb.*

4. Smaller; bill exceedingly acute, yellow, culmen and gonys black. Rump white, streaked with dusky. Tail, 2.65 inches *linarius*.

5. Similar, but smaller; tail scarcely 2 inches; rump tinged with reddish *rufescens*.

B. Middle toe and claw shorter than the tarsus. Rump never streaked in adult males.

III. General colors light. Breast light rosy.

6. Size of *linarius*. Feet short and weak. Tarsus 0.55; middle toe 0.28 *exilipes*.

7. Much larger. Feet long and strong. Tarsus 0.65; middle toe 0.30 *canescens*.

The following table will exhibit the comparative measurements of the species, and, to some extent, the amount of variation to which they are subject:—

Comparative Measurements of Species.

Name.	Sex.	Length	Extent.	Wing.	Tail.	Bill.	Tarsus.	Middle Toe.	Its claw.
<i>A. rostratus</i>	♂	6.00*	.....	3.25	2.70	0.41	0.68	0.41	0.24
do.	♀	5.50*	.....	3.05	2.55	0.40	0.60	0.38	0.20
do.	♂	5.70*	.....	3.05	2.45	0.41	0.66	0.40	0.26
<i>A. fuscescens</i>	♂	5.25	8.80	2.85	2.35	0.35	0.58	0.36	0.19
do.	♀	5.20	8.60	2.80	2.35	0.32	0.58	0.36	0.19
do.	♂	5.30	9.00	2.90	2.35	0.34	0.59	0.37	0.22
<i>A. rufescens</i> †.....	♂	4.50	.....	2.55	2.00	0.29	0.44	0.29	.....
<i>A. linarius</i>	♂	5.50	9.00	3.08	2.65	0.34	0.56	0.35	0.22
do.	♀	5.40	8.90	2.95	2.55	0.34	0.58	0.35	0.23
do.	♂	5.20	8.50	2.80	2.20	0.32	0.57	0.34	0.23
do. (Eur.sp).....	♂	2.95	2.35	0.33	0.60	0.37	0.24
<i>A. Holbölli</i> †.....	♂	5.25	.....	2.83	2.25	0.37	0.54	0.33	0.20
<i>A. exilipes</i>	♂	9.00	3.00	2.55	0.30	0.55	0.28	0.25
do.	♀	2.85	2.50	0.30	0.54	0.29	0.20
do.	♂	3.08	2.55	0.34	0.58	0.30	0.25
<i>A. canescens</i>	♂	6.00*	.....	3.25	2.75	0.33	0.65	0.28	0.28
do.	♀	6.00*	.....	3.30	2.82	0.34	0.65	0.30	0.28

* Of skin. † Measurements taken from Bp and Schl.

Discussion of Synonyms.—As will be seen by the list given at the head of this article, the genus has quite a number of partial and entire synonyms. This has been caused partly by the fact that there are several forms more or less intimately related, to which the present has been referred; and partly by the fact that the two names which have been in most general use for this group,—*Linaria* and *Acanthis*,—were both first used in a different connection; the former designating a genus of plants, the latter a genus of birds distinct from the present. Fortunately, however, it is not difficult to refer all the synonyms to their proper types, and determine the name to be employed. We take them up in order.

The type of the genus is presented by Linnaeus as a *Fringilla*, and subsequently referred by Pallus to *Passer*. The bird is also given by Koch as *Spinus linaria*, being considered by that author as belonging to the same genus as the *Carduelis elegans* (1) (*Fringilla carduelis* of Linnaeus), which is the type of *Spinus*. These three names, therefore, become partial synonyms.

Linaria is first used for this genus by Cuvier, in 1817. Bechstein, however, in 1802, applies this name to the *Fringilla cannabina* Linn., and if the name is to be retained for any genus of birds, it must be for that one of which the *F. cannabina* is the type. But Bechstein's name is itself superseded by *Linaria* of Tournefort, of 1717, which is the designation of a genus of plants; since, according to the rules of nomenclature, the name cannot be again employed in any other connexion.

Linota of Bonaparte, of 1838, has as its type *Fring. cannabina* Linn.; but becomes a partial synonym of the present genus because that author included in it the *Fring. linaria* Linn., at that time considering the two forms as only sub-generically distinct. *Linota*, however, in any event, would have to yield to *Cannabina* of Brehm, of 1828, which is based upon the same type (*Fring. cannabina* Linn.), and has priority.

"*Acanthis*, Keys. et Bl." (1840), is used by Bonaparte in his *Conspectus* for this genus. The type of *Acanthis* of Keyserling and Blasius is, however, the *Fringilla spinus* Linn., a form generically distinct from the one now under consideration, and the name consequently cannot be used in this connection. But even if it were based upon the *Fringilla linaria* Linn., it would be superseded by *Acanthis* of Meyer (1822), and of Bechstein (1802), both of which are founded upon a different type (*Fringilla carduelis* Linn.), and have priority in point of date.

Thus it happened, somewhat singularly, that up to the year 1851, this very marked and well known genus had received no tenable distinctive name. At that date *Ægiothus* was proposed by Cabanis, and is now in general use.

We quote *Linacanthus* Des Murs, 1853, upon the authority of G. R. Gray, not having an opportunity of verifying it. The identification of the names of Bechstein and Koch in the preceding paragraphs, are upon the authority of Cabanis.

ÆGIOTHUS ROSTRATUS Coues. Nov. sp.

Diag.—*A. Ægiotho fusciscenti* coloribus similis, sed multo major (*A. canescenti* staturâ par,) rostro maximo, robustissimo, arcuato, fusco; ventre plerumque fusco-striato.

Mas nupt. temp. pectore carmesino, uropygio rosaceo.

Fem. et mar juv. colores hæc desunt.

Long. 6.00 poll. ala 3.25, cauda 2.70; rostr. long. 0.41.

tarsus 0.68, dig. med. 0.41, ung. 0.24.

Hab. Groenlandia. Eur. bor. Amer. Sept. bor?

Description. (Male, adult, summer plumage; Jacobshavn, Greenland). The bill is enormously large for this genus, but very slightly compressed, the tip but little acute; the lateral outline is nearly straight; the culmen and gonys are both decidedly convex, and much rounded, having but slight indications of

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the sharp ridge of *linarius*. The commissure is about straight; but the depression of the tip of the upper mandible, which gives the convexity to the culmen, causes it to be a little decurved. The bill is higher than broad at the base, and so vaulted and arched as to resemble that of *Cannabina* or even *Carpodacus* rather than of *Egiotus*. It is mostly of a dusky horn color, but the cutting edges, and a great portion of the lower mandible are light bluish horn color. The nasal plumuli are short, scarcely covering more than the basal third of the bill, and are rather scant. The front, lores and a gular spot are dusky, as in all other species of the genus, the feathers of the former having slightly wavy tips. The pileum is deep crimson. The sides and back of the head and neck, and the upper parts generally to the rump, are blackish brown, scarcely relieved by the dull brownish yellow which margins the feathers so very narrowly as to give an almost uniform dusky aspect to those parts. The rump, though lighter than the rest of the upper parts, is so merely in consequence of the fading of the dull yellowish margins of the feathers into white, it being streaked with dusky almost or quite as thickly as the back itself. The wings and tail are deep dusky brown, very narrowly margined with whitish, most conspicuous on the inner secondaries, but even there much narrower than in any other species except *fuscescens*. The light borders and tips of the median and greater coverts are also reduced to a minimum, being scarcely broader than the margins of the primaries. The under parts are dull white; the sides of the neck, breast and body, and the under tail coverts thickly streaked with well defined lines of deep dusky; the throat, breast, sides of the head and body, and the rump, suffused with rosy, which deepens into carmine on the breast, and is palest on the rump and sides under the wings. The streaks on the sides of the body extend quite across the lower part of the breast; but the middle of the belly and the abdomen are unspotted. The feet are brownish black, large and stout, but are not disproportionate to the size of the bird. They have much the same comparative size and relative proportions of tarsus and toe, as in *linarius* or *fuscescens*. The claws are all short, blunt and little curved, even more so than in *fuscescens*, and differing greatly in this respect from *canescens*, the only species of the genus which equals it in size of body, or in the absolute size of the feet. In the forking of the tail and the proportion of the primaries, it does not differ materially from other species.

Variations by sex, age, &c.—The adult female in summer plumage differs in being notably smaller, though the general proportions, and the shape of the bill are preserved. The crimson pileum is greatly restricted. There is only a barely appreciable tinge of rosy on the breast, and none at all on the rump. The breast is instead thickly streaked, like the sides, with well defined dusty lines and spots.

Immature males, and old males in winter, differ from the adult males in summer, merely in having the rosy or carmine much less vivid and more restricted, the feathers of the breast being tipped with whitish.

Very young birds of both sexes differ, as is usual in this genus, from the adults, in a general rufous or yellowish suffusion, more or less intense, especially about the head and breast; and in a general want of the distinct definition of the dusky streaks, which have reddish borders, and fade insensibly into whitish. The streaks on the under parts appear to be more numerous, the middle of the belly only being free from them. In a specimen before us, the rufous suffusion is more decided than we have ever seen it even in *linarius*, its color being deeper and darker, as we should expect from the much darker colors of the adult birds. Immature specimens have frequently the much restricted pileum of a bright coppery rather than deep crimson tint.

Accidental variations.—With but a small series of specimens—only nine in number—we are unable to present the variations to which the species is subject as fully as might be desired. As far, however, as we can judge from the specimens before us, they are inconsiderable. But even if they were very
1861.]

great, the species is so marked, and so distinct from any other that there would be no difficulty in recognizing it. The difference in the length of wing of the largest male and smallest female before me is barely three-eighths of an inch. The bill constantly preserves its peculiar size and shape, and in very young birds, still in the downy state, is quite different from that of any other species. The color of the upper parts hardly varies appreciably. The edgings of the wings differ somewhat in breadth, but are never so broad as those of *linarius*. The claws vary considerably in acuteness and amount of curvature; the difference, however, being caused apparently by a greater or less amount of wearing away of the sharp tips.

Comparison with allied species.—The present species, possessing such marked characters, hardly requires comparison with any other except *fuscescens*. As already stated, it is much larger than that species, the difference in the length of the wings being nearly half an inch. The next greatest difference is seen in the bills. That of *A. fuscescens* is larger and every way stouter than that of *linarius*, but the differences between *fuscescens* and *rostratus* in this respect are even greater. As regards color, the two are almost identical, except that in *rostratus* the dusky streaks of the sides usually extend quite across the lower part of the breast.

From *A. linarius* and still more from *A. rufescens*, the differences are sufficiently obvious. It differs in color exactly as does *fuscescens*, and, in addition, in the greatly superior size, and the enormously large bill. *A. Holbölli* has a long and robust bill; but it is bright yellow, not dusky horn color; and the general colors of the bird are those of *linarius*.

In size this species about equals *A. canescens*; but here the resemblance ends. The general very dark, instead of very light colors; the heavily streaked, instead of immaculate sides; the very large and arched, instead of small and conic bill; and the very different proportions of tarsus, toes and claws, with other characters, at once separate the two.

It is unnecessary to institute a comparison with *A. exilipes*, the characters in almost every particular being exactly opposite.

Remarks.—It seemed to us hardly possible that so very distinct a species as the present could, at this late day, have remained undescribed. We accordingly searched with care all the authorities on the subject, which the libraries of the Smithsonian and the Academy contain, but could find no notice of it. Holbölli, Temminck and other authors, who admit the *A. canescens*, have gone considerably into detail with regard to its variations and changes of plumage, which, as well as those of *A. linarius*, are now well known, and a pretty definite "theory of variation" of the genus established. But seasonal or sexual changes of plumage, even the most abnormal, could never produce the marked difference in the size and shape of the bill, and the proportions of the feet and toes. Having therefore been unable to find any description which applies even approximately, we have ventured to impose a name, feeling quite assured, that if we are in error in so doing, some one will before long correct the mistake.

The specimens upon which the species is founded were, with one exception, received from the Copenhagen Museum, to which we are indebted for a fine series of several species, kindly transmitted for examination. They are labelled as having been obtained in Greenland.

ÆGIOTHUS FUSCESCENS COUES.

Aegiothus fuscescens Coues, Notes Ornith. Labrador, in Proc. Acad. Nat. Sci. Phil., Aug. 1860, p. 222.

Diag. *A. Aegiotho linario* paululum minor, rostro fusco magno robusto, plumulis brevibus sparsisque, superioribus partibus fuscis vix luteo striatis, alis caudâque vix albido marginatis, lateribus distinctè nec confluentè fusco-striatis.

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Mas nupt. temp. uropygio rosaceo, pectore carmesino.

Fem. et mas juv. pectore albido fusco-striato.

Long. 5.25 poll. ; alar. lat. 9.00 ; ala .2.90 ; cauda 2.35 ; rostr. 0.35 ; tars. 0.58 ; dig. med. 0.36 ; ung. 0.20.

Habitat. Amer. Sept. bor. et orient.

A detailed description of the present species, with the points in which it differs from the *linarius*, has already appeared in the Proceedings of the Academy, as above, and there is consequently no necessity for giving them here. A comparison with the *A. rostratus*, and the differences from that species, will be found under the latter head. The following additional remarks may aid in elucidating the characters of the species.

A small series of specimens from Moose Factory, Hudson's Bay, differ slightly from the Labrador types in a more elongated bill. The bill, however, still preserves the stoutness, and the dusky color of the present species, and the other characters agree strictly with my original specimens.

Several specimens have been received from Forts Resolution and Simpson, collected by Mr. Robert Kennicott, which agree in the most minute particulars with the Labrador types. Indeed, so far as we can judge from a series of twelve specimens from various localities in northern North America, the characters of the species are more constant than in any other of the genus, showing little or no tendency towards those of *linarius*, from which there is not the slightest difficulty in distinguishing it.

The figures given by Audubon in his "*Linaria minor* Ray," come much nearer to the present species than to the *A. linarius*. Moreover, we find in the collection two specimens which were received from Mr. Audubon, and which were quite probably the originals of the plate. The description, however, is undoubtedly that of the true *linarius*.

ÆGIOTHUS RUFESCENS (Vieill.) Cab.

Fringilla linaria, Temminck, Man. Orn. 1835, 267. Nec Linn. Nec Temm. 1820.

Fringilla rufescens, Vieill., Faun. Franq. 83, tab. 41, fig. 1, fide Temm. Id. Dict. Nouv. 1817, xxxi. 342.

Linaria rufescens, Bp. et Schl. Monogr. Lox. 1850, 50, tab. 54.

"*Linaria minor*, Ray, Gould, Birds Eur. 1843, iii. tab. 194," secundum Bp. et Schl.

Linaria flavirostris, septentrionalis, canigularis, Brehm, Vog. Deuts. sec. Bp.

Linaria rubra Gesn.; *L. minima* Br. fide Bp.

Linota linaria Bon. Comp. List, 1838, sec. Bp.

Diag. *A. Ægiotio linario* similimus, sed minor, (long. 4.50 poll.) et cauda brevior, vix bipollicari, uropygio plus minus rufescente, fusco-striato. Long. 4 6-12 poll. ; ala 2 6-12 ad 7 -12 ; caud. 2 ; rostr. 3½-12 ; tars. 5½-12 ; dig. med. 3½-12.

Hab. Europ.

The above diagnosis, taken chiefly from Bonaparte, is that of a European species, admitted by most modern ornithologists. Following the usual custom, we present it as distinct, though, it must be confessed, not without some doubts as to the entire propriety of such a procedure. The characters of the species, as given in the diagnosis, certainly show very slight differences from the *linarius*. The distinctive features lie entirely in the smaller size, somewhat shorter tail, and, as the name indicates, a general reddish tinge, especially on the rump. But as is well known to be the case in this genus, the young of all the species have this reddish or yellowish suffusion; and in none is it more marked than in the *linarius*. A specimen of *linarius* from North America now before me, compared with a *rufescens* from Europe, has the rufous tinge everywhere much stronger than in the European bird, especially on the rump. We 1861.]

think that this character is hardly a tangible one by which to separate the two. The length (4.50 inches) and the length of tail ("barely two inches,") assigned to the species might be sufficient to separate, were it not for the fact that specimens of *linarius* are to be found, by comparing large series, which approach large specimens of *rufescens* very closely. In one of these from North America now before us, the tail barely exceeds that of a *rufescens* appreciably. Still, as we have never seen, out of a large series of specimens, any individuals of *linarius* so small as to measure only 4.50 inches in length, and especially as the species is admitted by so many ornithologists, we have concluded to present it as distinct. We do not consider that the fact of the occasional occurrence of specimens of two nearly allied species which cannot be distinguished without difficulty as any proof of the specific identity of the two; and, moreover, the few specimens we have examined may not present, typically, the characters of the species.

Acanthis rufescens is given by Bonaparte and Schlegel, in their very valuable work, the "Monographie des Loxiens," rather as a sub-species, or race of *linarius*, than as entitled to full specific rank. Bonaparte, however, in his Conspectus, considers its characters as of full specific value. The two authors first mentioned speak of it as follows: "Elle offre quelquefois des teintes, plus vives que le sizerin commun; mais il paraît encore exister, entre ces deux oiseaux, par rapport à la taille, un passage graduel, absolument comme celui qui nous avons signalé entre le sizerin commun et celui d'Holböll." "Nous avons vu que le sizerin d'Holböll se distingue du sizerin commun par une taille plus fort; la *race*"—the italics are ours—"dont nous nous occupons maintenant s'en éloigne en sens contraire, c'est à dire par une taille plus petite."

It should be borne in mind that Temminck, whose authority in matters of this sort is deservedly high, takes every opportunity of strenuously denying the existence of the *A. rufescens*. He accounts for the discrepancies in size in the following manner: "Il existe, dans cette espèce"—*A. linarius*—"comme chez la *Fringilla cannabina*, *Fringilla phyrhula*, *Alauda cristata*, *Perdix cinerea*, et chez plusieurs espèces d'oiseaux de marais, des individus, souvent des compagnies entières, dont les dimensions sont moins fortes; nous avons observés que ces variétés plus ou moins constantes dépendent de causes purement accidentelles et locales. Il me paraît qu'il est ainsi du *Sizerin* et du prétendu *Cabaret*, qu'on veut faire passer comme deux espèces distinctes."

The *Fringilla linaria* of Temminck, of 1820, is the true *linaria*: but Temminck's *linaria* of 1835 is as certainly the present species, race, or variety, whichever it is to be considered. That author, in his brief diagnosis, dwells especially upon the small size, and the brownish rump; and alters the dimensions from five inches (which is more nearly correct for the true *linaria*), to "quatre pouces cinq ou six lignes," which can only refer to the present species. This identification of his *linarius* of 1835 is moreover rendered necessary by the synonyms adduced.

ÆGIOTHUS LINARIUS (Linn.) Cab.

Fringilla linaria, Linn. Syst. Nat. i. 1766, 322; auctorumque antiq. plerique.

Temm. Man. Orn. 1820, 373; nec Temm. 1835.

Fringilla (*Acanthis*) *linaria*, Keys. et Blas., Wirb. Eur. 1840, 161; num. 115.

Passer linaria, Pallas, Zoog. Rosso-As. 1811, ii. 25.

Spinus linarius, Koch, Syst. baier. Zool. 233; fide Cab.

Linota linaria, Holb. F. Grœnl. 1846, 29.

Acanthis linaria, Bp., Consp. Av. 1850, i. 541. Bp. et Schleg. Monogr. Lox. 48, tab. 52.

Ægiotus linarius, Cab., Mus. Hein. 1851, 161. Bd. Gen. Rep. 1858, 428.

Linaria minor, Ray, Sw. et Rich. F. B. A. 1831, ii. 267.

Fringilla borealis, Vieill., Nouv. Dict. xxxi. 341; nec Temm. quae *Linaria canescens*, Gould.

Linota borealis, Bp., Ind. Eur. Av. 48.

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Diag.—A. rostro tenue, acutissimo, compresso, flavo, plumulis hand densis ad medium porrectis, superioribus partibus luteis fusco-striatis, lateribus uropygioque semper fusco-striatis, pedibus mediocribus, digito medio cum ungue tarso aequale.

Mas nupt. temp. jugulo, pectore, lateribus, uropygioque roseo tinctis.

Fem. et mas juv. pectore uropygioque albidis, fusco-striatis.

Long. 5.50 poll.; alar. lat. 9.00; ala. 3.00; cauda 2.50; rostr. 0.34; tarsus 0.56; dig. med. 0.35; ung. 0.22.

Hab. Amer. Sept., præcip. bor.; Europ. Asia.

Description. (Adult male, in breeding plumage).—The bill is small, slender, exceedingly acute, much compressed, higher than broad at the base, the lateral line very concave; the culmen and gonys are about straight; the commissure appears straight to the angle, but the cutting edge of the lower mandible has a considerable lobe towards the base, which being incurved, is concealed by the overlapping edges of the upper mandible in the closed bill. The bill is bright yellow, except the culmen and gonys, which are dusky. The nasal plumuli, though not very dense, are considerably lengthened, extending over half the bill. The front, lores and a rather small gular spot are blackish; but the feathers of the first have whitish tips, which give it a hoary appearance. There is a superciliary streak somewhat lighter than the adjacent parts, but it is illy defined. The entire crown is deep crimson, as in full plumaged birds of all the species of the genus. The sides and back of the head and neck, the upper parts generally to the rump, the scapulars and lesser wing coverts, are variegated with blackish brown and dingy yellowish; each feather having its central portion of the former color, its edges and tip of the latter. On the rump the yellowish mostly disappears, that part being streaked with dusky and pure white. The wings and tail are brownish black or deep dusky; the latter all round, the former only on the outer vanes edged with whitish. The edging is very narrow on the primaries, but on the inner secondaries and tertials becomes broad and conspicuous. The median and greater coverts are narrowly edged and broadly tipped with white, with a tinge of yellowish, forming two transverse bars on the wings. The throat, breast, sides to some distance, with the rump, are tinged with carmine, deepest on the breast, faintest on the rump. This color, though brighter than in *canescens*, or *exilipes*, never becomes as deep a crimson as is seen in *fuscescens*, having always more of a rosy tint. It extends along the throat, not however encroaching on the sides of the neck, quite to the dark gular spot, which it does not invade, but extends on the sides of the head almost to the eyes. Along the sides of the body it reaches quite to the tibiæ, further than on the middle of the belly. There are no dusky streaks across the breast; but these extend along the sides. They are pretty numerous, much more so than in *exilipes*, and quite dark; but they are illy defined, and more or less confluent, lacking the sharpness of outline of *fuscescens*. The under tail coverts have dusky shaft lines. The feet are deep brownish black, moderately long and stout; the middle toe with its claw about equal to the tarsus. The claws are moderately long, curved and acute, and black.

Variations by sex, age, &c.—The old males in winter plumage differ from those in summer merely in having the crimson of the crown less intense; the rosy of the breast and rump lighter and more restricted, the feathers of the breast being tipped with whitish for a greater or less extent; and in a rather more notable amount of yellowish, especially observable on the rump and sides of the breast.

The adult females either want entirely, or have but very slight traces of the rosy of the male on the breast and rump. The latter is generally, except in wanting the rosy tint, much as in the male; but the breast has instead a light dingy yellowish wash, and is streaked quite across with dusky. The female is, moreover, usually smaller than the male.

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Immature birds of both sexes hardly differ from each other, except that the young males soon show slight traces of the rosy, which the young females entirely want. The young of both sexes may, however, be readily recognized by the presence of a general yellowish or buffy suffusion, especially about the head and neck, more or less conspicuous. This is sometimes so marked in character as to cause the bird to be streaked above with dusky and *reddish brown*, and to have the sides of the head and neck, the breast and the sides of the body yellowish brown. The lateral streaks are more indistinctly defined, having borders of the prevailing reddish, which fades insensibly into white. The white edgings of the wings and tail partake of the general buff tinge. At this age also the crimson of the crown is restricted to scarcely more than a frontal patch, and has often a coppery or brazen rather than a deep crimson color.

Accidental variations.—Although this species in common with others of the genus, varies somewhat in size and proportions, in addition to the sexual and seasonal changes to which it is subject, the variations are within narrow limits, and the species readily recognizable through all of them. In a very large series (over fifty in number) from Europe and various localities in North America, the greatest difference in length is hardly over one-third of an inch. The difference in length of wing is about .25 of an inch. The feet do not differ appreciably in length or stoutness, though the claws vary somewhat in length and amount of curvature. The bill is usually very constant, preserving its attenuation and acuteness. Its color, however, differs; sometimes the upper mandible, more rarely the greater part of the lower, are dusky; and on the other hand, the usual gamboge yellow is so bright as to become chrome. The proportions of the quills vary considerably. Usually the second is longest, the first and third equal and nearly equalling the second; the fourth a little, and the fifth considerably shorter. Sometimes the first three are about equal; sometimes the first is absolutely longest: and, again, the fourth is so long, or the first so short, as to cause them to become equal. The variations in plumage, other than those of sex and age, already adverted to, are unimportant. The rump is, in all ages and seasons, conspicuously streaked.

Comparison with allied species.—The present species having been taken at the standard of comparison, the differences between it and other species will be found detailed under their respective headings.

In a critical and extended examination and comparison of an extensive series of specimens from both continents, I have been unable to detect any characters by which to separate the American and European birds. They appear to be absolutely identical.

Discussion of synonymy.—Although this species has a large number of synonyms, these arise chiefly from the numerous genera to which it has been referred. The only points which need discussion here are the following:

The *Fringilla borealis* Vieill. (not of Temminck,) is certainly the present species, although Temminck places it as a synonym of his *F. borealis*, which is *Linaria canescens* Gould. No description accompanies the *Linota borealis* of Bonaparte's "Index Europæarum Avium." That author quotes *Fringilla linaria* Ray, and *Fring. borealis* Vieill., which would cause his *Linota borealis* to become a synonym of the present species; but, if so, he is in error in adding *Linaria canescens* Gould. It is most probable, however, that he was at that time indisposed to admit the latter as a distinct species. The identification of his *Linota borealis* with the present species is, moreover, rendered necessary by the synonyms adduced to his *Linota linaria*. (*Linaria rubra* Gesn., and *L. rufescens* Vieill.) causing the latter to refer to the smaller species, as a synonym of which Bonaparte himself, in his *Conspectus*, considers it.

The *Linaria minor* Ray, of Swainson's *Fauna Boreali-Americana*, is the true *A. linarius* of North America. *L. minor* Ray, of Gould's *Birds of Europe*, is considered by Bonaparte and Schlegel as referring to the *A. rufescens*. With-

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out the original description of Ray before us, we are unable to say to which of the two species his *L. minor* refers.

ÆGIOTHUS HOLBOELLI (Brehm) Cab.

Linaria borealis, Schleg. fide Bp.; nec Vieill.; nec Temm. 1820, nec Temm. 1835, nec Aud., nec *Linota bor.* Bp.

Linaria Holboelli, Brehm., Vög. Deutschl. 280.

Acanthis Holbölli, Bp. et Schleg. Monogr. Lox. 1850, 50, pl. 53.—Bp. Consp. Av. 1850, 541.

Diag.—*A. Ægiotho linario* major, rostro flavissimo, maximo, robustissimo, elongato, basi tantum plumulis, tecto; macula gulæ extensa lorisque nigris; vertice rubro; pectore uropygioque rosaceis.

Long. 5 3-12 poll; Ala. 2 10-12 ad 2 11-12; cauda 2 2-12, rostr. long. 4½-12 ad 4½-12, alt. 3-12, lat. 2½-12; tarsus 6½-12; dig. med. 4-12, ung. 2½-12; hallux 2½-12, ung. 3½-12.

Hab. Eur. bor. et occid.

The preceding diagnosis is of a species, which, like the *A. rufescens*, is so closely allied to the *A. linarius* as to render it a matter of some doubt whether it be anything more than a variety or race of that species. Its characters lie in the somewhat larger size, and the very large bright yellow bill with its short plumuli. Never having had an opportunity of examining a specimen of this species, there being none in the Museum of the Smithsonian Institute, or of the Philadelphia Academy, we can express no opinion with regard to its relationships to the *A. linaria*. It is, we believe, admitted as a distinct species by most later ornithologists, though Bonaparte and Schlegel, in their Monograph of the *Loxiinæ*, place it in the same category as the *A. rufescens*. Having nothing to offer respecting it, we take the liberty of transcribing the remarks made by the authors just mentioned:

"Cette race du Sizerin ressemble sous tous les rapports à l'espèce précédente," —*A. linarius*—"mais elle est d'une taille plus forte, et son bec est plus long et plus robuste. Elle est beaucoup plus rare que le Sizerin commun et la petite race appelée Cabaret ou *Ac. rufescens*. Nous avons examiné un nombre assez considerable d'individus pris en Saxe et en Belgique. On trouve quelquefois des individus intermédiaires entre cette race et le Sizerin, de sorte qu'il existe entre ces oiseaux, un passage semblable à celui qui a lieu entre les Bec-croisés grand et ordinaire."

Temminck places this species ("Holböll's Leinfink" of Brehm) as a synonym of his *Fringilla borealis*. This, however, is an error, his *F. borealis* being the *Linaria canescens* of Gould.

We quote *Linaria borealis* Schleg. on the authority of Bonaparte's *Conspetus*. It is, so far as we can learn, the only instance of the application of the name *borealis* to this species. A discussion of *Linota borealis* Bp. will be found under *A. linarius*.

ÆGIOTHUS EXILIPES Coues. Nov. sp.

Fringilla borealis, Aud. Orn. Biog. v. 1837, 87; pl. 400; nec Vieill.

Linaria borealis, "Temm." Aud. B. Am. 1841, iii. 120; pl. 178, nec Temm.

Ægiothus canescens, Ross, Edin. Phil. Journ. Jan. 1861, 163. *Minime Auctorum*.

Diag.—*A. Ægiotho linario* similis, ejusdemque stature; rostro plerumque parvo, (sed variante) acuto, conico, magna ex parte fusco; plumulis densissimis, sed brevibus; fronte canescente, loris gulæque macula, atris; uropygio candido, immaculato, lateribus striis paucis confluentibus fuscis; pedibus parvis exilibusque, digitis brevibus; medio cum ungue tarso brevior.

Mas nupt. temp. pectore uropygioque rosaceis.

Fem. et mar. juv. hic color deest.

Long. 5.50 poll.; alar. ext. 9.00 · ala, 3.00; cauda, 2.50; tarsus, 0.30; digit. med. 0.28; ung. 0.22.

Hab. America Sep. bor.

1861.]

Description.—[No. 19,686, adult male, Fort Simpson, 30 Apr. 1860.] The bill is small, short, stout, thick at the base, regularly conical, somewhat compressed, but not so much so as in *A. linarius*, dusky throughout, except the cutting edges. The tip of the upper mandible slightly overhangs that of the lower. The culmen, gonys, and commissure from the angle are all about straight. The nasal plumuli are exceedingly full, dense and heavy, reaching about half way to the top of the bill. They are very much heavier than in *linarius*, and though absolutely shorter than in that species, they are comparatively as long, owing to the smaller size of the bill. The front is dusky like the lores, and more broadly so than *linarius*, but the feathers are tipped with whitish, which gives the forehead a hoary appearance. There is an appreciable light superciliary streak, more distinct than in *linarius*. The lores, and a gular spot are dusky. The crown is deep crimson, exactly as in *linarius*. The general color of the upper part is that of *linarius*; but the dusky streaks are smaller, more numerous and indistinct, especially on the anterior portions of the back; the yellowish is much lighter than in *linarius*, approaching to white. Towards the rump the yellowish tint disappears before the streaks do, leaving a space streaked with dusky and pure white. The rump is pure white, immaculate, with a delicate light rosy tinge. The upper tail coverts have slightly dusky centres. The wings and tail are much as in *linarius*. The primaries are very narrowly edged and tipped with white, the edging becoming quite broad on the inner secondaries. The median and greater coverts are narrowly edged, and broadly tipped with white, forming two transverse bars. The second primary is longest; the first and third equal and scarcely shorter; the fourth a little less, the fifth very much shorter. The under parts are white the throat, breast and belly with a light tinge of rosy, many shades lighter than in specimens of *linarius* of the same age and season. The sides are streaked with dusky; but the streaks are very sparse, and illy-defined, much more so than in *linarius*. The under tail-coverts are almost immaculate. The feet are brownish black, as are also the claws; the feet are much smaller, and weaker than in *linarius*, the difference being especially noticeable in the length of the toes. The middle toe without the claw is shorter than that of *linarius* by about the length of the last joint of the latter species.

Variations by age, sex, &c.—As is usual throughout this genus, evidences of immaturity are to be found in the faintness, or entire absence of the rosy tint of the breast and rump, these parts being lightly streaked with dusky; in the restriction of the crimson of the crown to a frontal patch, and in a general light yellowish or buffy suffusion about the head and fore-breast. The suffusion, however, does not appear to be as deep as that of *linarius*, and some other species. The females are hardly distinguishable from the young males; but the crimson of the crown has usually an orange reflection, and the breast and rump are more thickly streaked. The size appears rather less.

Accidental Variations.—The variations to which this species is subject, other than those of sex and age, are very great, much more so than exist in any other species of the genus. The dimensions of the whole bird; the size, shape and color of the bill; the color and number of the streaks above and on the sides; the extent and purity of the white of the rump, &c., are all liable to great variations. Indeed, almost the only character that is perfectly constant lies in the feet, in their absolute size, and the relative length of the tarsus and toes. With this variation, however, the specimens all have a general resemblance to each other, which, together with the character of the feet, render it easy to distinguish them from any other species of the genus. The precise combination of characters varies with almost every specimen; and there are, moreover, intermediates to be found between all extremes; entirely removing the doubt which might otherwise arise, as to whether there were not two or more species combined in the series of specimens.

In an extensive series, comprising thirty-seven specimens, I have found the

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variations to be as follows. The difference in total length of body is rather more than .50 of an inch. The average size is rather less than 5.50 inches. The difference in length of wing from the carpal joint is somewhat over .25 of an inch. In length of tail the differences are about the same. The feet are constant, both absolutely and relatively, the variations being scarcely appreciable. The claws, however, vary quite notably in length and amount of curvature. To express the difference in the feet of this species and the *A. linarius*, relatively without measurement, we have said that in the former the tarsus exceeds the middle toe and claw, and that in the latter the toes are equal; but this variation in the size of the claws may cause the fact not to hold good in all cases. The bills vary quite notably in size and color, they being sometimes nearly as bright yellow as in *linarius*; but they are usually almost entirely dusky, and they are never so acutely pointed and so much compressed as in that species, preserving their regular conical shape without much variation. The plumuli vary in color, from dingy whitish to dusky, but are usually of the former color, and are always heavy and full. The upper parts are usually as given in the description; lighter than in *linarius*, the conspicuous yellowish or buff of that species fading into whitish more or less pure. Sometimes, however, the upper parts are quite like *linarius*; in other specimens the dusky centres of the feathers become so broad and conspicuous as to give the prevailing color of the upper parts, causing the specimens to approach *A. fuscescens* in this respect only. In these cases, however, the light edges of the feathers, though so narrow, are nearly pure white, and the rump is very broadly pure white, entirely without streaks, forming a marked contrast. The edgings of the wings and tail do not vary notably, being always nearly identical with those of *linarius*, but perhaps a little purer. The rump in adult birds is pure white, with a rosy tinge, without spots or streaks; but in immature specimens it is frequently marked with dusky, though never so thickly as in *linarius*. The dusky streaks on the sides are usually very sparse, and though varying in number and intensity, never become so thick and dark as in *linarius*. These streaks in immature and female birds frequently extend as slight touches quite across the breast. In adult males the breast is immaculate, with a light rosy tint. In the fullest plumaged males the rosy is always several shades lighter than in the males of *linarius* of the same age.

Comparison with allied species.—*A. linarius* being most closely related, in the foregoing descriptions the comparisons have been made with that species. The points of difference may be summed up as follows: The smaller, more conic, less compressed, darker colored bill, with its very heavy and dense nasal plumuli; the different character of the streaks above; the white immaculate rump; the paucity of the streaks on the sides; the much lighter rosy tinge of the breast and abdomen; the smaller, every way weaker feet, with their much shorter toes.

Some specimens—the largest and lightest colored—resemble *A. canescens* in general appearance, having the same conic bill, heavy plumuli, white rumps, sparsely streaked sides, &c. They may, however, be readily distinguished by the great discrepancy in the size of the feet and claws, those parts in *canescens* being as much larger and stronger in *linarius* as they are smaller and weaker than in that species in *exilipes*.

The species requires no comparison with *A. fuscescens*, still less so with *A. rostratus*, the differences from both of those species being sufficiently obvious.

The very large, bright yellow bill, with the short plumuli of *A. Holbölli*, at once separates that species. The smaller size, more acute bill, less dense plumuli, general rufous tinge and shorter tail of *A. rufescens* will serve to distinguish it. Both these species, moreover, have the same character of feet as has the *A. linarius*.

Discussion of synonymy.—The only name which we have met with which can be referred to this species, is the *Fringilla*, or *Linaria borealis* Temm., of Au-1861.]

dubon. The identification with the present species, rather than with the *borealis* of Temminck, which is the true *Linaria canescens*, Gould, is rendered necessary by the measurements given, especially those of the entire length, and length of tarsus. Moreover, a specimen of *exilipes* now before us agrees so minutely with Audubon's figure and description, that we have not the slightest hesitation in referring the one to the other.

In the Edinburgh Philosophical Review, as above, there is given, by Bernard R. Ross, Esq., a list of a collection of birds made by himself on Mackenzie's River. This is the same collection that was sent to the Smithsonian; and the *Ægiothus canescens* there mentioned refers to the very series of birds upon which we have based our *A. exilipes*. The mistake is, however, very pardonable, as the writer had no specimens of the true *canescens* for comparison; and affords a good example of the caution necessary to be used in identifying specimens from descriptions, especially when so brief as is the diagnosis of *A. canescens* in the General Report.

ÆGIOTHUS CANESCENS, (Gould,) Cab.

Linaria canescens, Gould, Birds Eur., 1843, iii. tab. 193.

Linota canescens, Bon. Comp. List, 1838.

Acanthis canescens, Bon. Consp. Av., 1850, 541. Bp. et Schl. Monogr. Lox., 1850, 47, tab. 51.

Ægiothus canescens, Cab. Mus. Hein., 1851, 161. Baird, Gen. Rep. Birds, 1858, 429.

"*Linaria Hornemanni*, Holb. Kroy. Nat. Tidsk., 1843, iv. 398."

Linota Hornemanni, Holb. Faun. Groen., 1846, 30.

Fringilla borealis, Temm. Man. Orn, 1835, 264, excl. syn. Nec Vieill.; nec *Fring. bor.* vel *Linaria bor.* Aud. quæ *Æg. exilipes* Coues; nec *Linota bor.* Bp. quæ *Fring. linaria* L.

Diag.—*A. Ægiotho lmaro* major (long. 5.75 poll.), rostro mediocri, conico; plumulis densissimis, superioribus partibus fusco alboque striatis, inferioribus uropygioque albidis immaculatis; cauda elongata, pedibus validissimis, unguibus protractis et incurvatis.

Mas nupt. temp. pectore uropygioque roseo indutis.

Fem. et mas juv. pectore uropygioque albidis, fusco-lineatis.

Long. 6.00 poll.; cauda, 2.75; ala, 3.25; rostrum, 0.34; tarsus, 0.65; dig. med. 0.30; ung. 0.28.

Hab.—Groenlandia. Europ. Amer. Sept.?

Description.—(Adult, Greenland. From Holbøll himself.) The bill is moderate, or rather small for the size of the bird, regularly conic, very stout at the base, where it is as high as long; only moderately compressed and acute; the upper mandible is mostly dusky, the lower, dusky only along the gonys, the rest being yellowish. The nasal plumuli are very dense, and reach nearly to the middle of the bill; those between the nostrils are grayish, those on the sides of the bill much darker, of the same color as the brownish black lores and gular spot. The front is brownish black, but the feathers have broad, hoary tips. There is a pretty well defined, light superciliary streak, extending quite to the base of the bill, and including the lateral feathers of the front. The crimson pileum occupies nearly the whole of the crown. The sides of the head, sides and back of the neck and upper parts generally, are streaked with brownish black and white; the feathers have the centre of the former color, and are edged and tipped with the latter. The white is nearly pure, except on the sides of the head and neck, where it has a slight yellowish tinge. The proportions of the primaries do not differ materially from those of other species. The first, second and third are nearly equal and longest; the fourth is a little, and the fifth considerably shorter. The quills are brownish black, edged with white, very narrowly on the primaries, more broadly on the secondaries; the tips of the greater and median coverts are broadly white,

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forming two conspicuous transverse bands across the wings. The tail is brownish black, like the wings, quite broadly edged with white; and is comparatively as well as absolutely longer than in other species. The entire under parts, from the throat, together with the rump, are pure white, entirely without spots or streaks; the breast and rump having a light rosy tinge. The feet are brownish black; remarkably long and strong for this genus, exceeding in this respect those of any other species. The claws are all long, strong, greatly curved and very acute. That of the middle toe nearly or quite equals its digit, and that of the hind toe much exceeds it.

The entire plumage in this species is of a thick, soft, mollipilose character, enabling it to endure the rigors of winter in very high latitudes.

Variations by age, sex, &c.—Immature birds, though preserving the general characteristics and appearance of the adults, differ in several respects. The changes are entirely analogous to those adverted to under *A. exilipes*. The pure white edgings of the feathers of the upper parts and wings become tinged with yellowish, more or less intense, especially about the head and neck, where there is a general buffy suffusion. This yellowish sometimes becomes very bright and conspicuous. The crimson on the crown is restricted to a patch extending scarcely half way to the occiput. The nasal plumuli and the front are more yellowish, and the dusky lores and gular spot more restricted. The bill is yellowish, except along the culmen and gonys. There is little or no indication of the rosy on the breast and rump, which, instead, are sparsely streaked with narrow lines of dusky.

According to Holböll, the summer plumage differs from that of winter, chiefly by the narrower whitish edgings of the feathers. The bill is entirely dusky, except along the cutting edges, and very thick, being as broad as high. The old females, and the young males after the first month, differ from the adult males in winter plumage in the entire absence of the rosy on the breast and rump, and in the less purity of the white beneath, the sides being lightly streaked.

Without a sufficiently extensive series of skins, I am unable to present the variations in size, proportions, &c., to which this species is subject. As, however, neither Temminck nor Holböll, as far as I can discover, make mention of them, it is to be presumed that the species is subject to no very remarkable deviations in these respects.

Comparison with allied species.—This species, in its large size, strong feet and claws, general light colors, white rump, &c., is too distinct to require comparison, except perhaps with *A. exilipes*. The differences will be found detailed under the head of the latter.

Discussion of synonymy.—We have not been able to find where *Linaria canescens* is first characterized; but, as Bonaparte, in 1838, gives a *Linota canescens*, the species must have been introduced at least as early as that date. The date of *Linota Hornemanni* is 1843; and the latter consequently loses the priority claimed for it by Holböll.

The *Fringilla borealis* of Temminck (but not of Vieillot) is undoubtedly the present species. The diagnosis and the very full description are accurate and pertinent, although the dimensions given ("longueur, cinq pouces"), is below the usual standard. But, while the description is thus applicable to the present species, the author evidently either considers his bird as quite a different one, viz., the common *linaria* of Europe and America, or else is in error with regard to the names he quotes as synonyms. For, in giving the synonymy he says: "C'est dans l'une ou l'autre de ces livrées très variables suivant la saison, la *Fringilla linaria* des auteurs tant anciens que modernes, qui ont souvent confondu les deux espèces." He then quotes as synonymous, "La Fringille sizerin," Vieill. (Gal. Ois. 78, pl. 65), and "Le Sizerin boréal," Roux. (Orn. Prov. 165, pls. 101 and 102), both of which refer to the true *Fringilla linaria* of Linnæus. He also, in a note under *F. linaria*, while insisting on the 1861.]

specific identity of *A. linarius* and *rufescens*, says, that—"le Sizerin boréal (*Linaria borealis*) de Vieillot forme une espèce distincte"—from *A. rufescens*—"identique de mon Gros-bec boréal de l'article précédent, mais auquel on ne doit pas réunir le Sizerin ou le Cabaret des auteurs, deux dénominations synonymes de mon Gros-bec sizerin ou *Fringilla linaria* des méthodistes;" clearly mis-identifying Vieillot's bird. In discussing Temminck's names of the *Ægithi*, it must be borne in mind that he sturdily refuses to admit the specific distinction of *A. linarius* and *rufescens*. He moreover places as a synonym of his *Fringilla borealis*, the "Holbölls Leinfink" of Brehm, which later ornithologists, with what propriety I am unable to say, regard as a distinct species.

Borealis of Temminck has priority over both *canescens* Gould, and *Hornemanni* Holb.; but as the name was previously applied by Vieillot to the *A. linarius*, it cannot of course be retained.

This name *borealis* has been applied by four authors to as many different species, for neither of which it can stand. *Borealis* Vieillot, is the *A. linarius* (Linn.) Cab.; *borealis* Schlegel, is the *A. Holböll* (Brehm) Cab.; *borealis* Temminck, is the *A. canescens* (Gould) Cab.; while *borealis* "Temm." of Audubon is the *A. exilipes* Coues.

Dec. 3d.

Mr. LEA, President, in the Chair.

Twenty-two members present.

The following papers were presented for publication:

A revision of the species of *Baculites* described in Dr. Morton's Synopsis of the Cretaceous Group of the United States, by Wm. M. Gabb.

On *Squalus Americanus* Mitchell, referring it to the genus *Odonaspis* Agassiz, by C. C. Abbott.

Descriptions of the lower Silurian, Jurassic, Cretaceous and Tertiary Fossils collected in Nebraska by the Exploring Expedition under the command of Capt. W. F. Reynolds, U. S. Top. Eng., with some remarks on the rocks from which they were obtained, by F. B. Meek and F. V. Hayden, M. D.

Dec. 10th.

Mr. LEA, President, in the Chair.

Thirty-four members present.

The following papers were presented for publication:

Descriptions of new Paleozoic Fossils from Kentucky and Indiana, by Sidney S. Lyon.

On the Mollusca of Harper's Ferry, Virginia, by George W. Tryon, jr.

Dec. 17th.

Mr. LEA, President, in the Chair.

Twenty-seven members present.

A paper was presented for publication, entitled,

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